

FORM PTO-1390  
(REV 10-95)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

**TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. §371**

SCH 1821

U.S. APPLICATION NO. (If known, see 37 CFR §1.5)

**09/936133**

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PCT/EP00/02005 ✓

8 MARCH 2000 ✓

PRIORITY DATE CLAIMED

9 MARCH 1999 ✓

TITLE OF INVENTION

HUMAN NUCLEIC ACID SEQUENCES AND PROTEIN SEQUENCES FROM ENDOTHELIAL CELLS

APPLICANT(S) FOR DO/EO/US


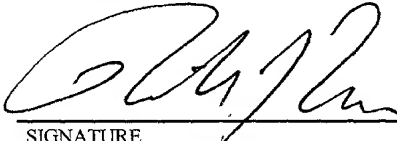
THIERAUCH, Karl-Heinz, et al.

**Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:**

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. §371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. §371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. §371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. §371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19<sup>th</sup> month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. §371(c)(2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. §371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. §371(c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. §371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. §371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. §371(c)(5)).

**Items 11. to 16. below concern document(s) or information included:**

11. ☐ An Information Disclosure Statement under 37 C.F.R. §§1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. §§3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
14. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☐ Other items or information:

U.S. APPLICATION NO. (if known, see 37 CFR §1.5) <b>09/936133</b>		INTERNATIONAL APPLICATION NO. PCT/EP00/02005		ATTORNEY'S DOCKET NUMBER SCH 1821	
17. <input checked="" type="checkbox"/> The following fees are submitted: <b>BASIC NATIONAL FEE ( 37 CFR §1.492 (a) (1) - (5)):</b> Search Report has been prepared by the EPO or JPO..... \$860.00 International preliminary examination fee paid to USPTO (37 CFR §1.482)..... \$690.00 No international preliminary examination fee paid to USPTO (37 CFR §1.482) but international search fee paid to USPTO (37 CFR §1.445(a)(2))..... \$710.00 Neither international preliminary examination fee (37 CFR §1.482) nor international search fee (37 CFR §1.445(a)(2)) paid to USPTO..... \$1000.00 International preliminary examination fee paid to USPTO (37 CFR §1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)..... \$100.00  <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>CALCULATIONS</b> <span style="float: right;">PTO USE ONLY</span>	
				<b>\$860.00</b>	
Surcharge of <b>\$130.00</b> for furnishing the oath or declaration later than months from the earliest claimed priority date (37 C.F.R. §1.492(e)). <input type="checkbox"/> 20 <input type="checkbox"/> 30					
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	40 - 20 =	20	x \$ 18.00	<b>\$360.00</b>	
Independent claims	10 - 3 =	3	x \$ 80.00	<b>\$240.00</b>	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$ 270.00		
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$1,460.00</b>	
Reduction of 1/2 for filing by small entity, if applicable. A Verified Small Entity Statement must also be filed (Note 37 C.F.R. §§1.9, 1.27, 1.28).					
<b>SUBTOTAL =</b>				<b>\$1,460.00</b>	
Processing fee of <b>\$130.00</b> for furnishing the English translation later than months from the earliest claimed priority date (37 C.F.R. §1.492(f)). <input type="checkbox"/> 20 <input type="checkbox"/> 30					
<b>TOTAL NATIONAL FEE =</b>				<b>\$1,460.00</b>	
Fee for recording the enclosed assignment (37 C.F.R. §1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 C.F.R. §§3.28, 3.31). \$40.00 per property.					
<b>TOTAL FEES ENCLOSED =</b>				<b>\$1,460.00</b>	
				Amount to be refunded:	
				charged:	
a. <input checked="" type="checkbox"/> A check in the amount of <u>\$1,460.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. <u>13-3402</u> in the amount of \$_____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>13-3402</u> . A duplicate copy of this sheet is enclosed.					
<b>NOTE: Where an appropriate time limit under 37 C.F.R. §§1.494 or 1.495 has not been met, a petition to revive (37 C.F.R. §1.137(a) or (b)) must be filed and granted to restore the application to pending status.</b>					
SEND ALL CORRESPONDENCE TO: Customer Number 23,599					
 <b>23599</b> PATENT TRADEMARK OFFICE			 SIGNATURE		
Filed: 7 SEPTEMBER 2001  RJT:kmo			<u>Richard J. Traverso</u> NAME		
			<u>30,595</u> REGISTRATION NUMBER		

JPCT  
JC20 Rec'd PCT/PTO 22 APR 2002

IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

International Application No. : PCT/EP00/02005  
International Filing Date : 8 MARCH 2000  
U.S. Serial No. : 09/936,133  
Deposit Date U.S. Nat'l Phase : 7 SEPTEMBER 2001  
Priority Date(s) Claimed : 9 MARCH 1999  
Applicant(s) : THIERAUCH, Karl-Heinz, et al.  
Title: HUMAN NUCLEIC ACID SEQUENCES AND PROTEIN SEQUENCES FROM  
ENDOTHELIAL CELLS

RESPONSE TO NOTIFICATION OF DEFECTIVE RESPONSE  
IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

Commissioner for Patents  
Box PCT  
Washington, D.C. 20231

Sir:

In response to the Notification of Defective Response mailed 11 FEBRUARY 2002, attached is a paper and disk version of the Sequence Listing, a statement affirming that the paper and disk versions are identical, as well as a copy of the Notification.

Applicants request that the time for responding to this action be extended 4 month(s) from the mailing date of the Notification of Missing Requirements to 22 APRIL 2002. A check for the statutory fee or \$1,440.00 is enclosed.

The Patent and Trademark Office is authorized to deduct any additional fees from, or credit any overpayments to, counsel's deposit account No. 13-3402, a copy of this paper being attached.

Respectfully submitted,

04/25/2002 MAIL11 00000030 09936133

01 FC:118

1440.00 DP

Anthony J. Zelano Reg. No. 27,969  
Attorney for Applicants  
MILLEN, WHITE, ZELANO & BRANIGAN, P.C.  
Arlington Courthouse Plaza I  
2200 Clarendon Boulevard, Suite 1400  
Arlington, Virginia 22201  
Direct Dial: 703-812-5311  
Facsimile: 703-243-6410  
Internet Address: zelano@mwzb.com



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket No: SCH 1821

In re patent application of

THIERAUCH, KARL-HEINZ *et al.*

Serial No. 09/936,133

Filed: September 7, 2001

For: HUMAN NUCLEIC ACID SEQUENCES AND PROTEIN SEQUENCES  
FROM ENDOTHELIAL CELLS

STATEMENT TO SUPPORT FILING AND SUBMISSION IN  
ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Assistant Commissioner for Patents  
Washington, D.C. 20231  
**Box SEQUENCE**

Sir:

In connection with a Sequence Listing submitted concurrently herewith, the undersigned hereby states that:

1. the submission, filed herewith in accordance with 37 C.F.R. § 1.821(g), does not include new matter;

2. the content of the attached paper copy and the attached computer readable copy of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same; and

3. all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United




Serial No. 09/936,133

States Code and that such willful false statements may jeopardize the validity of the application or any patent resulting therefrom.

Respectfully submitted,

April 19, 2002  
Date

  
\_\_\_\_\_  
James A. Coburn

HARBOR CONSULTING  
Intellectual Property Services  
1500A Lafayette Road  
Suite 262  
Portsmouth, N.H.  
800-318-3021



## SEQUENCE LISTING

<110> THIERAUCH, KARL-HEINZ  
GLIENKE, JENS  
HINZMANN, BERND  
PILARSKY, CHRISTIAN

<120> HUMAN NUCLEIC ACID SEQUENCES AND PROTEIN SEQUENCES  
FROM ENDOTHELIAL CELLS

<130> SCH 1821

<140> 09/936,133

<141> 2001-09-07

<150> DE 199 11 684.9

<151> 1999-03-09

<150> DE 199 48 679.4

<151> 1999-10-01

<150> PCT/EP00/02005

<151> 2000-03-08

<160> 60

<210> 1

<211> 1835

<212> DNA

<213> Homo sapiens

<400> 1

```
ttttacagtt ttccttttct tcagagttaa ttttgaattt tcatttttgg ataaccaagc 60
agctcttttaa gaagaatgca cagaagagtc attctggcac ttttggatag tacataagat 120
tttctttttt ttttttaaat tttttttaat agtcacattc agctcgcttg ctcaaaccag 180
actcccatat tgggtgagca agatgagccc ataggattcc agagttaata cgtaaccgta 240
tatacaaaaca gccaaaaaac cataatggtg ccacagggat ggagcagggg agggcatctc 300
taacgtgtcc tctagtctat ctctgctaaa cagaacccac gttacacatg ataactagag 360
agcacactgt gttgaaacga ggatgctgac cccaaatggc acttggcagc atgcagttaa 420
aagcaaaaga gacatccttt aataactgta taaaatccag gcagtcccat taaaggggtt 480
aagaaaaacca acaacaacaa aaagcgaggg actgtctgtt gtcactgtca aaaaggcact 540
tggagttaat gggaccagga ttggaggact cttagctgat acagatttca gtacgatttc 600
attaaaaggc ttggatgtta agagaggaca ctcagcgggt cctgaagggg gacgctgaga 660
tggaccgctg agaagcggaa cagatgaaca caaaggaatc aaatctttac aacgaaattg 720
catttaagcg acaacaaaaa aaggcaaac ccacaaacgca acctaaccac agcaaaatct 780
aagcaaaatc agacaacgaa gcagcgatgc atagctttcc tttgagagaa cgcatacctt 840
gagacgctac gtgccaacct aagttctcaa cgacagcttc acagtaggat tattgtgata 900
aaaatgactc aagcgatgca aaaagtttca tctgttccca gaatccgagg gagaactgag 960
gtgatcgtaa gagcatagcg acatcacgtg cggtttctta atgtccctgg tggcggatag 1020
gccgagtcct cggaaggaca tctggacacc actttcagcc acctccttgc aggggcgaca 1080
tccgccaaag tcatecttta ttcggagtaa taactttaat tcttttctaa catttacag 1140
gcaaacagga atgcagtaaa cgtccacgtc cgtccacagg ctgggctgcc gtccgctttc 1200
ctccacgaac gggtagcggc ttccatgaga aaggatattt ggcaatttta tattccacag 1260
tcagggtgggt ctgcgatagc tcatttaatg ttaaacgcca tcaggggcct ctctcccgt 1320
ttctgccagg ggcttttctt gtcttctcct tggcgagctc gtgggcagat cttctctgg 1380
gggggctggc tgctggctcc gagggggcat ccgcagtcgg tctggctcgt tctcctgca 1440
ggctgggcag ctggccacca ctctccgac tcgaccctc caacaagcat cgcagggcac 1500
tgtcctcggg ggtacagacc gtggctccac attcgttacc actctgttcc acgtcatcca 1560
```

```

ggtagacacgag ctgcgtgtag gccgtgctgt ctggggctcg aggcctcttcc tgctgggtgct 1620
cttggaacggg cgggtagttc tgctgcagag acaaagcacc tccccttccc ttccgggctg 1680
atcttggttc attcatatct acgccagagt ccaaactggc atcattactt ccgttccctc 1740
cagctctttg gagaatcaat gtatgaatgt ctaacctgac cggtggacct gccatccaag 1800
gagacgaacc acgcccgggg gtgcggaagc ggcct 1835

```

<210> 2

<211> 581

<212> DNA

<213> Homo sapiens

<400> 2

```

gttctagatt gttttattca gtaattagct ctttaagacc ctggggcctg tgctacccag 60
acactaaca cagtctctat ccagttgctg gttctgggtg acgtgatctc cccatcatga 120
tcaacttact tcctgtggcc cattagggaa gtggtagcct cgggagctat ttgcctgttg 180
agtgcacaca cctggaaaca tactgctctc attttttcat ccacatcagt gagaaatgag 240
tggcccgtta gcaagatata actatgcaat catgcaaca agctgcctaa taacatttca 300
tttattacag gactaaaagt tcattattgt ttgtaaagga tgaattcata acctctgcag 360
agttatagtt catacacagt tgatttccat ttataaaggc agaaagtcct tgttttctct 420
aaatgtcaag ctttgactga aaactcccg ttttccagtc actggagtgt gtgcgtatga 480
aagaaaatct ttagcaatta gatgggagag aagggaata gtacttgaat tgtaggcctc 540
cacctcccca tgacatctc catgagcctc ctgatgtagt g 581

```

<210> 3

<211> 516

<212> DNA

<213> Homo sapiens

<400> 3

```

tagagatgtt ggttgatgac ccccgggatc tggagcagat gaatgaagag tctctggaag 60
tcagcccaga catgtgcatc tacatcacag aggacatgct catgtcgagg aacctgaatg 120
gacactctgg gttgattgtg aaagaaattg ggtcttcac ctcgagctct tcagaaacag 180
ttgttaagct tcgtggccag agtactgatt ctcttcaca gactatatgt cggaaaccaa 240
agacctccac tgatcgacac agcttgagcc tcgatgacat cagactttac cagaaagact 300
tcctgcgcac tgcaggtctg tgcaggaca ctgctcagag ttacacctt ggatgtggcc 360
atgaactgga tgaggaaggc ctctattgca acagttgctt ggcccagcag tgcataaca 420
tccaagatgc ttttccagtc aaaagaacca gcaataactt ttctctggat ctactcatg 480
atgaagttcc agagtttgtt gtgtaaagtc cgtctg 516

```

<210> 4

<211> 1099

<212> DNA

<213> Homo sapiens

<400> 4

```

cccacaacac aggggcctcg aaacacgcca gcctctctc tgtggtcagc ttggcccagt 60
cctgctcact ggatcacagc ccattgtagg tggggcatgg tggggatcag ggcccctggc 120
ccacggggag gtagaagaag acctggtccg tgtaagggtc tgagaagggt ccctgggtcg 180
ggggtgcgtc ttggccttgc cgtgccctca tcccccgct gaggcagcga cacagcagg 240
gcaccaactc cagcagggtta agcaccaggg agatgagtc aaccaccaac atgaagatga 300
tgaagatggc cttctccgtg gggcgagaga caaagcagtc cacgaggtag gggcagggtg 360
ctcgctggca cacaacacag ggctccatgg tccagccgta caggcgccac tggccataga 420
ggaagcctgc ctctagcaca ctcttgca gaacactggc gacatagggt cccatcagtg 480
ctccgcggat gcgcaggcga ccattctctg ccaccgagat cttggccatc tgacgctcta 540
cgcccgccag gcccgcctcc acctgtgggt ccttggccgg cagtggccgc agctccccct 600
ccttctgccc cagccgctct tctcgccgag acaggtaaat gacatggccc aggtagacca 660
gggtgggtgt gctgacgaag aggaactgca gcaccagta gcggatgtgg gagatgggga 720

```

```

aggcctgggtc atagcagacg ttggtgcagc ctggctgggc cgtgttacac tCGaaatctg 780
actgctcgtc accccacact gactcgccgg ccaggccag gatgaggatg cggaagatga 840
agagcaccgt cagccagatc ttaccacca cggtcgagtg ctccctggac tggccagca 900
acttctccac gaagccccag tcacccatgg ctcccgggcc tccgtcggca aggagacaga 960
gcacgtcagt gtgtcagcat ggcattcctt tCGttcgccc agcaacaagc ctgcaggagg 1020
gtctgccacg cccgttctac cgcctgcctg ccgggcggcc caggtggagg tggggacgat 1080
ggccggagtg acgcccgcg
1099

```

```

<210> 5
<211> 1015
<212> DNA
<213> Homo sapiens

```

```

<400> 5
gaggataggg agcctggggg caggagtgtg ggagacacag cgagactctg tctccaaaaa 60
aaaaagtgt ttttgaatat gttgaggttg aaatgatggg aaccaacatt ctttggattt 120
agtggggagc ataatagcaa acacccctt gggtcgaca tgtacaggaa tgggaccag 180
ttggggcaca gccatggact tccccgcctt ggaatgtgtg gtgcaaagtg gggccagggc 240
ccagacccaa gaggagaggg tggtcgcag acaccccggt atgtcagcat ccccgacct 300
gccttctggc ggcacctccc ggggtgctgt ttgagtcagc aggcattggg tgagagcctg 360
gtatatgctg ggaacagggt gcaggggcca agcgttcttc cttcagcctt gacttggggc 420
atgcaccccc tctcccccaa acacaaacaa gcacttctcc agtatggtgc caggacaggt 480
gtcccttcag tctctgtgtt atgacctcaa gtccacttg ggcctgcag cccagcctgt 540
gttgtaacct ctgctcctc aagaccacac ctggaagatt cttcttccct ttgaaggaga 600
atcatcattg ttgctttatc acttctaaga cattttgtac ggcacggaca agttaaacag 660
aatgtgcttc cctccctggg gtctcacacg ctcccacgag aatgccacag gggccgtgca 720
ctgggcaggc ttctctgtag aaccccaggg gcttcggccc agaccacagc gtcttgccct 780
gagcctagag caggaggtcc cgaacttctg cattcacaga ccacctccac aattgttata 840
accaaaggcc tctgttctg ttatttctact taaatcaaca tgctattttg ttttactca 900
cttctgactt tagcctcgtg ctgagccgtg tatccatgca gtcattgtca cgtgctagtt 960
acgtttttct tcttacacat gaaaaataat gcataagtgt tagaagaaaa aaaaa 1015

```

```

<210> 6
<211> 2313
<212> DNA
<213> Homo sapiens

```

```

<400> 6
ccagagcagg cctgggtggtg agcagggagc gtgcaccgga cggcgggatc gagcaaatgg 60
gtctggccat ggagcacgga gggctctacg ctccggcggg gggcagctct cggggctgct 120
ggattacct gcgctacttc ttctctctcg tctccctcat ccaattcctc atcatcctgg 180
ggctcgtgct cttcatgggt tatggcaacg tgcacgtgag cacagagtcc aacctgcagg 240
ccaccgagcg ccgagccgag ggcctatata gtcagctcct agggctcacg gcctcccagt 300
ccaacttgac caaggagctc aacttcacca cccgcgcca ggatgccatc atgcagatgt 360
ggctgaatgc tcgcccgcag ctggaccgca tcaatgccag cttccgccag tgccagggtg 420
accgggtcat ctacacgaac aatcagaggt acatggctgc catcatcttg agtgagaagc 480
aatgcagaga tcaattcaag gacatgaaca agagctgcga tgccttgctc ttcatgctga 540
atcagaaggt gaagacgctg gaggtggaga tagccaagga gaagaccatt tgcactaagg 600
ataaggaaaag cgtgctgctg aacaaaacgc tggcgaggga acagctggtt gaatgcgtga 660
aaacccggga gctgcagcac caagagcgcc actggccaag gagcaactgc aaaagggtgca 720
agccctctgc ctgcccctgg acaaggacaa gtttgagatg gaccttcgta acctgtggag 780
ggactccatt atcccacgca gcctggacaa cctgggttac aacctctacc atcccctggg 840
ctcggaattg gcctccatcc gcagagcctg cgaccacatg cccagcctca tgagctccaa 900
gggtggaggag ctggcccgga gcctccgggg ggatatcgaa cgcgtggccc gcgagaactc 960
agacctccaa cgcagaagc tggaagccca cgaggcctg cgggcccagtc aggagcgaa 1020
acagaaggtg gagaaggagg ctcaggcccc ggaggccaag ctccaagctg aatgctccc 1080
gcagaccagc ctacgctggt aggagaaggc ggtgctgcgg aaggaaacgag acaacctggc 1140

```

caaggagctg gaagagaaga agagggagggc ggagcagctc aggatggagc tggccatcag 1200  
 aaactcagcc ctggacacct gcatcaagac caagtcgcag ccgatgatgc cagtgtcaag 1260  
 gcccattgggc cctgtcccca acccccagcc catcgaccca gctagcctgg aggagttcaa 1320  
 gaggaagatc ctggagtccc agagggcccc tgcaggcatc cctgtagccc catccagtgg 1380  
 ctgaggaggc tccaggcctg aggaccaagg gatggcccga ctggcggtt tgcggaggat 1440  
 gcagggatat gctcacagcg cccgacacaa cccctccccg ccgcccccaa ccaccagggg 1500  
 ccaccatcag acaactccct gcatgcaaac ccctagtacc ctctcacacc cgcaccggcg 1560  
 cctcacgatc cctcaccagc agcacacggc cgcggagatg acgtcacgca agcaacggcg 1620  
 ctgacgtcac atatcaccgt ggtgatggcg tcacgtggcc atgtagacgt cacgaagaga 1680  
 tatagcgatg gcgtcgtgca gatgcagcac gtgcacaca gacatgggga acttggcatg 1740  
 acgtcacacc gagatgcagc aacgacgtca cgggccatgt cgacgtcaca catattaatg 1800  
 tcacacagac gcggcgatgg catcacacag acggtgatga tgtcacacac agacacagtg 1860  
 acaacacaca ccatgacaac gacacctata gatatggcac caacatcaca tgcacgcatg 1920  
 cccctttcaca cacactttct acccaattct cacctagtgt caggttcccc cgaccctggc 1980  
 acacgggcca aggtaccac aggatcccat cccctccgc acagccctgg gccccagcac 2040  
 ctcccctcct ccagcttccct ggcctcccag ccacttccct acccccagtg cctggaccgg 2100  
 gaggtgagaa caggaagcca ttcacctccg ctccctgagc gtgagtgttt ccaggacccc 2160  
 ctcgggggccc tgagccgggg gtgaggggtca cctgttgtcg ggaggggagc cactccttct 2220  
 ccccactc ccagccctgc ctgtggcccg ttgaaatgtt ggtggcactt aataaatatt 2280  
 agtaaatcct taaaaaaaaa aaaaaaaaaa aaa 2313

<210> 7

<211> 389

<212> DNA

<213> Homo sapiens

<400> 7

gccaaaaaga tggcttcaaa agtaagaatg aaacatttga tccattcagc tttaggctat 60  
 gccactggat tcatgtctag aaaagatagg ataatttctg taaagaaatg aagaccttgc 120  
 tattctaaaa tcagatcctt acagatccag atttcaggaa acaaatacat agggggactaa 180  
 ctttccttgt tcagattagt ttttctcctt tgcacccagc tatataatat gaggaagtat 240  
 tgacttttta aaagtgtttt agttttccat ttctttgata tgaaaagtaa tatttcggga 300  
 gaaccctgag ctattaataa tctatgtggc tagtgcgtat atattggctc gaatttgttc 360  
 tccttttgtg gtgtccagtg ggtaacatc 389

<210> 8

<211> 157

<212> DNA

<213> Homo sapiens

<400> 8

tgcttttaaac agctgtgtca aaaactgaca tcagagagta aattgaattt ggtttttag 60  
 gaagcaggaa gcaagccac tcaaacgtga aatttggcat gagggatcca gtaactttct 120  
 cctcaatctg tgaactatat gtgagtttga tattttg 157

<210> 9

<211> 561

<212> DNA

<213> Homo sapiens

<400> 9

aatagtcaaa acataaacia aagctaatta actggcactg ttgtcacctg agactaagtg 60  
 gatgttgttg gctgacatac aggctcagcc agcagagaaa gaattctgaa ttccccttgc 120  
 tgaactgaac tattctgtta catatgggtg acaaatctgt gtgttatttc ttttctacct 180  
 accatattta aatttatgag tatcaaccga ggacatagtc aaaccttoga tgatgaacat 240  
 tcctgatttt ttgcctgatt aatctctgtt gagctctact tgtggtcatt caagatttta 300  
 tgatgttgaa aggaaaagtg aatatgacct ttaaaaattg tattttgggt gatgatagtc 360  
 tcaccactat aaaactgtca attattgcct aatgttaaag atatccatca ttgtgattaa 420

ttaaacttat aatgagtatt cttaatggag aattcttaat ggatggatta tcccctgac 480  
 ttttctttaa aatttctctg cacacacagg acttctcatt ttccaataaa tgggtgtact 540  
 ctgccccaat ttctaggaaa a 561

<210> 10  
 <211> 1508  
 <212> DNA  
 <213> Homo sapiens

<400> 10  
 cacaaacacg agagactcca cggctctgcct gagcaccgcc agcctcctag gctccagcac 60  
 tcgcaggtcc attcttctgc acgagcctct ctgtccagat ccataagcac ggtcagctca 120  
 gggctcgcgga gcagtagcag gacaagtacc agcagcagct cctctgaaca gagactgcta 180  
 ggatcatcct tctcctccgg gcctgttgct gatggcataa tccgggtgca acccaaactct 240  
 gagctcaagc caggtgagct taagccactg agcaaggaa atttgggcct gcacgcctac 300  
 aggtgtgagg actgtggcaa gtgcaaagt aaggagtga cctaccaag gcctctgcca 360  
 tcagactgga tctgcgacaa gcagtgcctt tgctcgcccc agaactgat tgactatggg 420  
 acttgtgtat gctgtgtgaa aggtctcttc tatcactgtt ctaatgatga tgaggacaac 480  
 tgtgctgaca acccatgttc ttgcagccag tctcactgtt gtacacgatg gtcagccatg 540  
 ggtgtcatgt cctctttttt gccttggtta tgggtgtacc ttccagccaa ggggtgcctt 600  
 aaattgtgcc aggggtgtta tgaccgggtt aacaggcctg gttgccgctg taaaaactca 660  
 aacacagttt gctgcaaagt tcccactgtc ccccttagga actttgaaaa accaacatag 720  
 catcattaat caggaatatt acagtaatga ggattttttt tttctttttt taatacacat 780  
 atgcaaccaa ctaaacagtt ataactcttg cactgttaat agaaagttag gatagtcttt 840  
 gctgtttgcg gtgaaatgct ttttgtccat gtgccgtttt aactgatatg cttgttagaa 900  
 ctgagctaat ggagctcaaa gtatgagata cagaacttgg tgacccatgt attgcataag 960  
 ctaaagcaac acagacactc ctaggcaaaag tttttgttg tgaatagtac ttgcaaaact 1020  
 tgtaaatag cagatgactt ttttccattg ttttctccag agagaatgtg ctatatattt 1080  
 gtatatacaa taatatttgc aactgtgaaa aacaagtgg gccatactac atggcacaga 1140  
 cacaaaatat tatactaata tgttgtacat tcggaagaat gtgaatcaat cagtatgttt 1200  
 ttagattgta ttttgcctta cagaaagcct ttattgtaag actctgattt ccttttgac 1260  
 ttcatgtata ttgtacagtt acagtaaaat tcaaccttta ttttctaatt ttttcaacat 1320  
 attgttttagt gttaagaata tttatttgaa gttttattat tttataaaaa agaataattta 1380  
 ttttaagagg catcttacia attttgcccc ttttatgagg atgtgatagt tgctgcaaat 1440  
 gaggggttac agatgcatat gtccaatata aaatagaaaa tatattaacg tttgaaatta 1500  
 aaaaaaaaa 1508

<210> 11  
 <211> 389  
 <212> DNA  
 <213> Homo sapiens

<400> 11  
 gggcaggtga tcagggcaca catttcccgt ccattgagac agtagcattc ccggcaccca 60  
 tcgtgccagc tctcctcatt tttatgatga tgaccatcca cggtagaca agtgcccgac 120  
 aggatgggtg gccagctga agcacaggcc gctctgcact tgcagataag acagccgtga 180  
 ctgtcctgct ggaaacccaa ggggcagatc ttactgcatg agagctctgg acatttctta 240  
 cagcgacaga tgtcacagcc gtgcttattc ttcagcaatc caagtggaca atacttgtca 300  
 cagattatgg gtctgcactt cttgggcctt gggcgccact cacagatctc acagttttgg 360  
 aactcggccg cgaccacgct gggtagcga 389

<210> 12  
 <211> 981  
 <212> DNA  
 <213> Homo sapiens

<400> 12  
 tttttttttt ttggattgca aaaatttatt aaaattggag acactgtttt aatcttcttg 60

```

tgccatgaga ctccatcagg cagtctacaa agaccactgg gaggctgagg atcacttgag 120
cccagaagtt tgaggctgta gtaagcttca aaggccactg cactctagct tgggtgaggg 180
aagacccttt caagcagtaa gctgcatgct tgcttggtgt ggctattaaa aaccctagtt 240
taggataaca acatattaat cagggcaaaa tacaaatgtg tgatgcttgt tagtagagta 300
acctcagaat caaaatggaa cgggttttaca gtgatatcat tatatttcat ttggcagaat 360
cattacatca ttggttacac tgaaaatcat cacatgtacc aaaagctgac tcacctagtt 420
taggataaca ggtctgcttg tttgaagatg aaaaataata cccattttaa atttgcccta 480
ctcaatttcc ttctcagtc ctttttaact tttaaacagc taatcactcc catctacaga 540
ttaagtgta tatgccacca aaaccttttg ccacctttaa aatttccttc aaagttaa 600
ctaagcctg catttcttca atcatgaatt ctgagtcctt tgcttcttta aaacttgctc 660
cacacagtgt agtcaagccg actctccata cccaagcaag tcatccatgg ataaaaacgt 720
taccaggagc agaaccatta agctgggtcca ggcaagttgg actccaccat ttcaacttcc 780
agctttctgt ctaatgcttg tgtgccaatg gcttgagtta ggcttgctct ttaggacttc 840
agtagctatt ctcatccttc cttggggaca caactgtcca taagtgctta tccagagcca 900
cactgcatct gcacccagca ccatacctca caggagtcca ctcccacgag ccgctgtgat 960
ataagagttc ttttgatgac g

```

<210> 13

<211> 401

<212> DNA

<213> Homo sapiens

<400> 13

```

ataactacag cttcagcaga caactaaaga gactgcatta aggtgatttc tctggctata 60
aagagagccc ggccgcagag catgtgactg ctgggacctc tgggataggc aacactgccc 120
tctctcccc agagcgaccc ccggggcagg tgggggcccc aggaatgacc cagcaactgc 180
tccttaccga gcacactctc tttactgcca cctgcaatta tgctgtgaag atgactgggt 240
gtggtcacat cgattcagag aaatcaagat ctatgaccat tttaggcaaa gagagaaact 300
tgagaaattg ctgaggacta ctgaaccttg ttttgctttt ttaaaaaata ctaaactctc 360
acttcagcat atttagttgt cattaaaatt aagctgatat t

```

<210> 14

<211> 1002

<212> DNA

<213> Homo sapiens

<400> 14

```

gacaatataa aaagtggaaa caagcataaa ttgcagacat aaaataatct tctggtagaa 60
acagttgtgg agaacagggt gagtagagca acaacaacaa aagcttatgc agtcaccttc 120
tttgaaaatg ttaaatacaa gtcctattct ctttgtccag ctgggttttag cttagaggtag 180
ccaattactt ctcttaaggt ccatggcatt cgccaggatt ctataaaagc caagttaact 240
gaagtaaata tctggggccc atcgcacccc cactaagtac tttgtcacca tgttgatatc 300
taaaagtcac ttttactgtg ttgactcaga atttgggact tcagagtcaa acttcattgc 360
ttactccaaa cccagtttaa ttccccactt ttttaagtag gcttagcttt gagtgatttt 420
tggctataac cgaaatgtaa atccaccttc aaacaacaaa gtttgacaag actgaaatgt 480
tactgaaaac aatgggtgcca tatgtcccaa agacatttcc ccaagataac tgccaaagag 540
tttttgagga ggacaatgat catttattat gtaggagcct tgatatctct gcaaaataga 600
attaatacag ctcaaatgga gtagtaacca agcttttctg cccaggaagt acaaacatc 660
actacgaaca tgagagtaca agaggaaact ttcataatgc attttttcat tcatacatc 720
attcaataaa cattagccaa gctaatgtcc caagccactg tgccaggat taacaatata 780
acaacaataa aagacacagt ccttcctctc aaggtgttca gtctagtagg gaagatgatt 840
attcattaaa atttttggtg catcagaatc atgaggagct tgtcaaaaat gtaaatcct 900
gcctatgttc tcagatatc tggttaggtc aggagtggga acccaaatc aattctttta 960
acaaacacta aaggtgattc taacacaggc ggtgtgagga cc

```

<210> 15

<211> 280

<212> DNA  
<213> Homo sapiens

<400> 15  
cgaggtgggc caccctgtgc tggctctgaga tttttaaatg aggattacat tatectatatt 60  
ataatattcc tattctaatac tattgtattc ttacaattaa atgtatcaaa taattcttaa 120  
aaacattatt agaaacaaac tgccataaac cttataagac taaaaaaatc accaagatga 180  
aactgtatta tgactctcaa tatttaaaca tttaaaaaaa tggtagtggt tggttaagcac 240  
caatcttaac tatttcacct gcccgggcgg ccgctcgagg 280

<210> 16  
<211> 2041  
<212> DNA  
<213> Homo sapiens

<400> 16  
ccccccgcag aactcccccc tggaatagga tttttaaaac ccttgacaat tagaaatcct 60  
atagaggtta gcatttttta ggtaaaaata tgggtgccc tacagggatc atgcaacttc 120  
cttaaaacca attcagcaca tatgtataaa gaaccctttt taaaaacatt tgtacttgaa 180  
atacagacac agtgatgctg aagacactaa acaaaaactg aaaagtacta taccttgata 240  
aattttgta ttgccttctt tagagacttt ataactctta gttgattttc aaggacttga 300  
atttaataat ggggtaatta cacaagacgt aaaggatttt ttaaaaacaa gtattttttt 360  
ttacctctag catcaattct tttataaaga atgctaaata aattacattt ttgtttcagt 420  
aaaactgaag atagaccatt taaatgcttc taccaaattt aacgcagctt aattagggac 480  
caggtacata ttttctctcg aacatttttg gtcaagcatg tctaaccata aaagcaaatg 540  
gaatttttaag aggtagattt tttttccatg atgcattttg ttaataaatg tgtcaagaaa 600  
ataaaaaaaa gcactgagtg tgttctcttg aagtataagg gtctaataaa aaataaaaaga 660  
tagatatttg ttatagctcg acatttttaac agtcatagta ttagacgttt cgtgaccagt 720  
gcatttttga ctctctcagg atcaaaatac gagtctgcca actgtattaa atcctcctcc 780  
acccccctca ccagttgggtc cacagcttcc tgggtgggtcg ttgtcatcaa atccattggg 840  
ccgaaatgaa catgaagcag atgcagcttg gagggcccgg gctcgagcat tcaactcttg 900  
ttcctgtaaa tatagtttat tgtcttttgt tatagcatcc ataagttctt tctgtagagg 960  
tgggtctcca tttatccaga gtccactggg tgggttatta ccacttaaac cattagtact 1020  
atgctgtttt ttatacaaaa gcacataagc tgtgtccttt ggaaacctgc tcgtaatatt 1080  
ctggaactgac tgaaatgaag taaatgtcac tctactgtca ttaaataaaa acccattctt 1140  
ttgacatttc cttattttcc aaatcctgtt caaaaactgc actgggacta tctctcccta 1200  
gtaaatgact ctgggaggat gctaattgcca gagcctcaga ctggtgggtac atctgatatg 1260  
aagagtctgt acttggtgata tttctggcat aagaatagta atgcccactt tcagaggata 1320  
taccagagtg aaccacaacg gaacttaata catagggcac caattttgtg caggaagctt 1380  
catcagtcct tgaaggcttt aatttttttag caaggttctc actaagatca gtgaagtcaa 1440  
catctacaga ccaactttct gacaatgaag agaaagaagt aattcttcta actggcaact 1500  
ccaaaaccag tggccagtga tacattgtct aaaaattttc ttctcacatg atacttctga 1560  
tcatatgaaa atctcaggag agtaagaata aggtattcag gttcctccgt gatttgcata 1620  
gttttctcag cattttgcag agaggcacag ttttcacaa aatattggtt atcaccagta 1680  
agaatctctg gagcccaaaa aataatttag taagtacgtt actgaagggtg tggtttcacc 1740  
tcccggtttc tgaggtacat ctttattaac aagaatcttg ttagattcgt tagggacaga 1800  
agtgttttca gaacagtaaa actcattagg aggaactgct atgggttttt cattcacaag 1860  
tgagtacacag atgaaggcag ctgttggttg attataaact actggctctt ctgaaggacc 1920  
gggtacagac gcttgcatta gaccaccatc ttgtatactg ggtgatgatg ctggatcttg 1980  
gacagacatg ttttccaaag aagaggaagc acaaaacgca agcgaaagat ctgtaaaggc 2040  
t 2041

<210> 17  
<211> 235  
<212> DNA  
<213> Homo sapiens



&lt;400&gt; 17

cgccccgggc	aggtgtcagg	ggttccaaac	cagcctgggg	aaacacagcg	tagaccctc	60
acctctacaa	ataaaaaatt	aaaaaattag	ccagggtgtg	cagcgaacaa	ctgtagtctc	120
agatactcag	gagactgagc	tggaaaggat	cacttgagcc	caagaagttc	aaggttacag	180
tgggccacga	tcattgtcatt	acactccagc	ttgggtgaca	aatgagact	gtcta	235

&lt;210&gt; 18

&lt;211&gt; 2732

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 18

gtgtggagtt	tcagctgcta	ttgactataa	gagctatgga	acagaaaaag	cttgctggct	60
tcattgtgat	aactacttta	tatggagctt	cattggacct	gttaccttca	ttattctgct	120
aaatattatc	ttcttgggtg	tcacattgtg	caaaatgggtg	aagcattcaa	acactttgaa	180
accagattct	agcaggttgg	aaaacattaa	gtcttgggtg	cttggcgctt	tcgctcttct	240
gtgtcttctt	ggcctcacct	ggtccttttg	gttgcttttt	attaatgagg	agactattgt	300
gatggcatat	ctcttcacta	tatttaaatgc	tttccagggg	gtgttcattt	tcattcttca	360
ctgtgctctc	caaaagaaag	tacgaaaaga	atatggcaag	tgcttcagac	actcatactg	420
ctgtggaggc	ctcccaactg	agagtcacca	cagttcagtg	aaggcatcaa	ccaccagaac	480
cagtgtctcg	tattcctctg	gcacacagag	tcgtataaga	agaatgtgga	atgatactgt	540
gagaaaacaa	tcagaatctt	cttttatctc	aggtgacatc	aatagcactt	caacacttaa	600
tcaaggtggc	ataaatctta	atatattatt	acaggactga	catcacatgg	tctgagagcc	660
catcttcaag	atttatatca	tttagaggac	attcactgaa	caatgccagg	gatacaagtg	720
ccatggatac	tctaccgcta	aatggtaatt	ttaacaacag	ctactcgctg	cacaaggggtg	780
actataatga	cagcgtgcaa	gttgtggact	gtggactaag	tctgaatgat	actgcttttg	840
agaaaatgat	catttcagaa	ttagtgcaca	acaacttacg	gggcagcagc	aagactcaca	900
acctcgagct	cacgctacca	gtcaaacctg	tgattggagg	tagcagcagt	gaagatgatg	960
ctattgtggc	agatgcttca	tctttaatgc	acagcgacaa	cccagggctg	gagctccatc	1020
acaaagaact	cgaggcacca	cttattcctc	agcggactca	ctccctctctg	taccaacccc	1080
agaagaaagt	gaagtccgag	ggaactgaca	gctatgtctc	ccaactgaca	gcagaggctg	1140
aagatcacct	acagtcctcc	aacagagact	ctctttatac	aagcatgccc	aatcttagag	1200
actctcccta	tcoggagagc	agccctgaca	tggaagaaga	cctctctccc	tccaggagga	1260
gtgagaatga	ggacattttac	tataaaagca	tgccaaatct	tggagctggc	catcagcttc	1320
agatgtgcta	ccagatcagc	aggggcaata	gtgatggtta	tataatcccc	attaacaaag	1380
aagggtgtat	tcagaagga	gatgttagag	aaggacaaat	gcagctgggt	acaagtcttt	1440
aatcatacag	ctaaggaatt	ccaagggcca	catgcgagta	ttaataaata	aagacaccat	1500
tggcctgacg	cagctccctc	aaactctgct	tgaagagatg	actcttgacc	tgtggttctc	1560
tggtgtaaaa	aagatgactg	aaccttgcat	ttctgtgaat	ttttataaaa	catacaaaaa	1620
ctttgtatat	acacagagta	tactaaagtg	aattatttgt	tacaaagaaa	agagatgcca	1680
gccaggtatt	ttaagattct	gctgctgttt	agagaaattg	tgaaacaagc	aaaacaaaac	1740
tttccagcca	ttttactgca	gcagtctgtg	aactaaatgt	gtaaatatgg	ctgcaccatt	1800
tttgtaggcc	tgcattgtat	tatatacaag	acgtaggctt	taaaaatcctg	tgggacaaat	1860
ttactgtacc	ttactattcc	tgacaagact	tggaaaagca	ggagagatat	tctgcatcag	1920
tttgagttc	actgcaaact	ttttacatta	aggcaaagat	tgaaaacatg	cttaaccact	1980
agcaatcaag	ccacaggcct	tatttcatat	gtttcctcaa	ctgtacaatg	aactattctc	2040
atgaaaaatg	gctaaagaaa	ttatatattt	ttctatttgt	agggtaaaaa	aaatacattt	2100
gtgtccaact	gaaatataat	tgctattaaa	ataattttta	agagtgaaga	aaatattgtg	2160
aaaagctctt	ggttgacat	gttatgaaat	gttttttctt	acactttgtc	atggttaagt	2220
ctactcattt	tcacttcttt	tccactgtat	acagtgttct	gctttgacaa	agttagtctt	2280
tattacttac	attttaaatt	cttatttgca	aaagaacgtg	ttttatgggg	agaaacaaac	2340
tctttgaagc	cagttatgtc	atgccttgca	caaaagtgat	gaaatctaga	aaagattgtg	2400
tgtcaccctt	gtttattctt	gaacagaggg	caaagagggc	actgggcact	tctcacaac	2460
tttctagtga	acaaaagggt	cctattcttt	tttaaaaaaa	taaaaataaa	cataaatatt	2520
actcttccat	attccttctg	cctatatatta	gtaattaatt	tattttatga	taaagttcta	2580
atgaaatgta	aattgtttca	gcaaaattct	gctttttttt	catccctttg	tgtaaacctg	2640
ttaataatga	gcccatcact	aatatccagt	gtaaaagtta	acacggtttg	acagtaaaata	2700
aatgtgaatt	ttttcaagtt	aaaaaaaaaa	aa			2732

<210> 19  
 <211> 276  
 <212> DNA  
 <213> Homo sapiens

<400> 19  
 ctccctaaat gatttttaaaa taaattggat aaacatatga tataaagtgg gtacttttaga 60  
 aaccgccttt gcataatTTTT tatgtacaaa tctttgtata caattccgat gttccttata 120  
 tattccctat atagcaaac aaaaccagga cctcccaact gcatgcctca agtccctgtg 180  
 gagcactctg gcaactggat ggcctactt gctttctgac aaaatagctg gaaaggagga 240  
 gggaccaatt aaatacctcg gccgcgacca cgctgg 276

<210> 20  
 <211> 2361  
 <212> DNA  
 <213> Homo sapiens

<400> 20  
 attgtaccag ccttgatgaa cgtggggcct gcttcgcttt tgagggccat aagctcattg 60  
 cccactgggt tagaggctac cttatcattg tctcccgta ccggaagggt tctcccaagt 120  
 cagagtttac cagcagggat tcacagagct ccgacaagca gattctaaac atctatgacc 180  
 tgtgcaacaa gttcatagcc tatagcaccg tctttgagga tgtagtggat gtgcttgctg 240  
 agtggggctc cctgtacgtg ctgacgcggg atgggcgggt ccacgcactg caggagaagg 300  
 acacacagac caaactggag atgctgttta agaagaacct atttgagatg gcgattaacc 360  
 ttgccaagag ccagcatctg gacagtgatg ggctggccca gattttcatg cagtatggag 420  
 accatctcta cagcaagggc aaccacgatg gggctgtcca gcaatatatc cgaaccattg 480  
 gaaagttaga gccatcctac gtgatccga agtttctgga tgcccagcgc attcacaacc 540  
 tgactgccta cctgcagacc ctgcaccgac aatccctggc caatgccgac cataccaccc 600  
 tgctcctcaa ctgctatacc aagctcaagg acagctcgaa gctggaggag ttcatacaaga 660  
 aaaagagtga gagtgaagtc cactttgatg tggagacagc catcaagggtc ctccggcagg 720  
 ctggctacta ctcccatgcc ctgtatctgg cggagaacca tgcacatcat gagtgggtacc 780  
 tgaagatcca gctagaagac attaagaatt atcaggaagc ccttcgatac atcggcaagc 840  
 tgccctttga gcaggcagag agcaacatga agcgtacgg caagatcctc atgcaccaca 900  
 taccagagca gacaactcag ttgctgaagg gactttgtac tgattatcgg cccagcctcg 960  
 aaggcccgag cgatagggag gcccaggct gcagggccaa ctctgaggag ttcataccca 1020  
 tctttgccaa taaccgcgca gagctgaaag ccttcctaga gcacatgagt gaagtgcagc 1080  
 cagactcacc ccaggggatc tacgacacac tccttgagct gcgactgcag aactggggcc 1140  
 acgagaagga tccacaggtc aaagagaagc ttcacgcaga ggccatttcc ctgctgaagg 1200  
 gtggctcgct ctgcgacgtc ttgacaagg cctggctcct gtgccagatg cagcacttcc 1260  
 aggatgggtg cctttacctt tatgagcagg ggaagctgtt ccagcagatc atgcactacc 1320  
 acatgcagca cgagcagtac cggcaggctc tcagcgtgtg tgagcgccat ggggagcagg 1380  
 accctcctt gtgggagcag gccctcagct acttcgctcg caaggaggag gactgcaagg 1440  
 agtatgtggc agctgtcctc aagcatatcg agaacaagaa cctcatgcc aactcttctag 1500  
 tgggtgcagac cctggcccac aactccacag ccacactctc cgtcatcagg gactacctgg 1560  
 tccaaaaact acagaaacag agccagcaga ttgcacagga tgagctgcgg gtgcggcgg 1620  
 accgagagga gaccaccgct atccgcagg agatccaaga gctcaaggcc agtcctaaga 1680  
 ttttccaaaa gaccaagtgc agcatctgta acagtgcctt ggagttgccc tcagtccact 1740  
 tcctgtgtgg cactccttc caccaacact gctttgagag ttactcggaa agtgatgctg 1800  
 actgcccac ctgcctcctt gaaaaccgga aggtcatgga tatgatccgg gccagggaac 1860  
 agaaacgaga tctccatgat caattccagc atcagctcaa gtgctccaat gacagctttt 1920  
 ctgtgattgc tgactacttt ggcagagggtg ttttcaacaa attgactctg ctgaccgacc 1980  
 ctcccacagc cagactgacc tccagcctgg aggtctgggt gcaacgcgac ctactcatgc 2040  
 actccaggag gggcacttaa gcagcctgga ggaagatgtg ggcaacagtg gaggaccaag 2100  
 agaacagaca caatgggacc tgggcggggc ttacacagaa ggctggctga catgcccagg 2160  
 gctccactct catctaattg cacagccctc acaagactaa agcggaaact tttcttttcc 2220  
 ctggccttcc ttaattttaa gtcaagcttg gcaatccctt cctctttaac taggcaggtg 2280  
 ttagaatcat ttccagatta atggggggga aggggaacct caggcaaac tctgaagtt 2340

ttggaaaaaa aagctggttt c

2361

<210> 21

<211> 179

<212> DNA

<213> Homo sapiens

<400> 21

agggtgttaga tgctcttgaa aaagaaactg catctaagct gtcagaaatg gattcttttta 60  
acaatcaact aaaggaactg agagaaacct acaacacaca gcagtttagcc cttgaacagc 120  
tttataagat caacgtgaca agttgaagga aattgaaagg aaaaaattag aactaatgc 179

<210> 22

<211> 905

<212> DNA

<213> Homo sapiens

<400> 22

tttttttttt ttctttaacc gtgtggtctt tatttcagt ccagtgttac agatacaaca 60  
caaatgttc agttagaagg aattcaaacg gaatgccaaag gtccaagcca ggctcaagaa 120  
ataaaaaggg aggtttggag taatagataa gatgactcca atactcactc ttcttaaggg 180  
caaaggtagt tttgatacag agtctgatct ttgaaactgg tgaactcctc ttccacccat 240  
taccatagtt caaacaggca agttatgggc ttaggagcac tttaaaattt gtggtgggaa 300  
tagggctcatt aataactatg aatatactct ttagaagggt accattttgc actttaaagg 360  
gaatcaattt tgaaaatcat ggagactatt catgactaca gctaaagaat ggcgagaaag 420  
gggagctgga agagccttgg aagtttctat taaaaataga gcaccatatt cttcatgcca 480  
aatctcaaca aaagctcttt ttaactccat ctgtccagt tttacaaata aactcgcaag 540  
gtctgaccag ttcttggtta caaacataca tgtgtgtgtc tgtgtgtata cagcaatgca 600  
cagaaaaggc taccaggagc ctaatgcctc tttcaaacat tgggggaacc agtagaaaaa 660  
ggcagggtct cctaattgtc attattacat ttccattccg aatgccagat gttaaaagt 720  
cctgaagatg gtaaccagc tagtgaggaa taaatacccc accttgcccc gtccacagag 780  
aaacaacagt agaaagaagg ggcaactctt tgctgcagag acaaaagtga tgttttttcg 840  
ccatggattg cagtctctc ctccagacca gctgcttatt tcctcagggg ccaggggaat 900  
gttga 905

<210> 23

<211> 2134

<212> DNA

<213> Homo sapiens

<400> 23

ggtctcttct ttcttttttt tttttccaaa agtgttcttt tatttctagt aacatatatt 60  
gtataaatac tctattttat atgcacttcc acaaaagcga tataatttaa aagttttttt 120  
cattagaaat aaatgtataa aaataaatat gttattatag gcatttatta ctaactatag 180  
tccttcttgg aaggaacacc caaaccaata cttataaagt acatgtaatt tatagtaaca 240  
tattttacta tatacatatg gaaaaaatca tattctcaca gaagagctga acagacattc 300  
accaggatac gactgttgga ccagctgctg gagatggacc tgctacccct cagcagcctc 360  
cccaccacaa gacaagtgat ctcaatgtcc ccaaacctgt gggaccctgt tctacacacc 420  
tcatttttgt tccggcgctt catctcctct gtgtgattgt actgattttc atgagacaca 480  
agttacttct ttacatccat attcccaaag cagggttaca tggtaggaaa gaaaggaagt 540  
tggaggtagt aagctcattg tgtctctctt agcttttacc agcatctaatt gcttactgca 600  
tttttttcca ttgtagactt taatgcactt gaataaatac atggagttgt tttttcctca 660  
aaatgaatta cacaaataaa gactgagatg gtccaaaaaa ggaaagagga agccattttgc 720  
gttatttcac gttgctgagc ctttctctca tgttgaacaa tctgaagttt taattctcgg 780  
tagaaataat gtataaacat tctctgaaac catagcagcc ataaacagtg ctggtcaaaag 840  
atcctatttg tactcctttc tccccccatt gttagttagg taaagtaaaa caggctcttag 900  
taaaatctca cttttctcct acttttcatt tcccaacccc catgatacta agtatttgat 960  
aagtaccagg aaacaggggt tgtaatatgt ctaacttttt ttgacaattg ctttgttttt 1020

```
<210> 24
<211> 1626
<212> DNA
<213> Homo sapiens
```

<210> 25  
<211> 1420

<212> DNA  
 <213> Homo sapiens

<400> 25

```

gttcagcatt gtttctgctt ctgaaatctg tatagtacac tggtttgtaa tcattatgtc 60
ttcattgaaa tccttgctac ttctcttcct cctcaatgaa agacacgaga gacaagagcg 120
acacaagctt aagaaaaacg agcaaggaag agtatcttca ttattctcat tttctctgag 180
ttggaaacaa aaacatgaag gactccaact agaagacaga tatttacatt taaatagatt 240
agtgggaaaa ctttaagagt ttccacatat tagttttcat tttttgagtc aagagactgc 300
tccttgtaact gggagacact agtagtatat gtttgtaatg ttactttaaa attatctttt 360
tattttataa ggcccataaa tactgggttaa actctgttaa aagtgggcct tctatcttgg 420
atggtttcac tgccatcagc catgctgata tattagaaat ggcatcccta tctacttact 480
ttaatgctta aaattatata taaaatgctt tatttagaaa acctacatga tacagtgggtg 540
tcagccttgc catgtatcag ttccacttga aatttgagac caattaaatt tcaactgttt 600
agggtggaga aagaggtact ggaaaacatg cagatgagga tatcttttat gtgcaacagt 660
atcctttgca tgggaggaga gttactcttg aaaggcaggc agcttaagtg gacaatgttt 720
tgtatatagt tgagaatttt acgacacttt taaaaattgt gtaattgtta aatgtccagt 780
tttgctctgt tttgcctgaa gtttttagtat ttgttttcta ggtggacctc tgaaaaccaa 840
accagtacct ggggagggtta gatgtgtgtt tcaggccttgg agtgtatgag tggttttgct 900
tgtattttcc tccagagatt ttgaacttta ataattgcgt gtgtgttttt ttttttttaa 960
gtgcttttgt ttttttttct caagtaaaat tgtgaacata ttccctttat aggggcaggg 1020
ctgaggttag ggagactgaa gagtattgta gactgtacat gtgccttctt aatgtgtttc 1080
tcgacacatt ttttttcagt aacttgaaaa ttcaaaaggg acatttggtt aggttactgt 1140
acatcaatct atgcataaat ggcagcttgt tttcttgagc cactgtctaa attttgtttt 1200
tatagaaatt ttttatactg attgggtcat agatggtcag ttttgtaaac agactgaaca 1260
atacagcact ttgccaaaaa tgagtgtagc attgttttaa cattgtgtgt taacacctgt 1320
tccttgtaat tgggttgttg tgcattttgc actacctgga gttacagttt tcaatctgtc 1380
agtaaaataa gtgtccttta acttcaaaaa aaaaaaaaaa 1420

```

<210> 26  
 <211> 689  
 <212> DNA  
 <213> Homo sapiens

<400> 26

```

aaacaaacaa aaaaaaagtt agtactgtat atgtaaatac tagcttttca atgtgctata 60
caaacaaatta tagcacatcc ttcccttttac tctgtctcac ctcccttagg tgagtacttc 120
cttaataaag tgctaaacat acatatacgg aacttgaaaag ctttggttag ccttgcccta 180
ggtaatcagc ctagtattaca ctgtttccag ggagtagttg aattactata aaccattagc 240
cacttgtctc tgcaccattt atcacaccag gacagggctc ctcaacctgg gcgctactgt 300
catttggggc caggtgatcc ttcccttgcaa gggtgtgctt gtacctgccg gggcgccgcg 360
tcgaagcgtg gtcgcggccg aggtactgaa aggaccaagg agctctggct gccctcagga 420
attcctaatg accgaaggaa caaagcttca gggctctggg tgggtgtctc cactattcag 480
gaggtggctg gaggtaacgc agcttcattt cgtccagtc tttccagtat ttaaagttgt 540
tgtcaagatg ctgcattaaa tcaggcaggt ctacaaaggg atcccaagca tcaaacatgt 600
ctgtgatgaa gtaatcaatg aaacaccgga acctccgacc acctcctgaa tagtgggaga 660
cacaccaga gcctgaagtt tgtccttcg 689

```

<210> 27  
 <211> 471  
 <212> DNA  
 <213> Homo sapiens

<400> 27

```

tcccagcggc atgaagtttg agattggcca ggccctgtac ctgggcttca tctccttcgt 60
ccctctcgct cattggtggc accctgcttt gcctgtcctg ccaggacgag gcaccctaca 120
agccctaacc caggcccgcc ccaggcccac cactgacctg gcaaacaccg cacctgccta 180
ccagccacca gctgcctaca aagacaatcg ggcacctca gtgacctcgg ccaccacagc 240

```

```
<210> 28
<211> 929
<212> DNA
<213> Homo sapiens
```

```
<210> 29
<211> 1775
<212> DNA
<213> Homo sapiens
```

<400> 29							
gaacgtgatg	ggaacttttg	gaggatgtct	gagaaaatgt	ccgaagggat	tttggccaac	60	
accagaaaac	gccaatgtcc	taggaattcc	ctcccaaat	gcttcccaa	aaattactca	120	
ttgacaattc	aaattgcact	tggctggcgc	cagcccgggc	ggccttcagt	ccgtgtgggy	180	
cgcccgctg	gccttctcct	cgtaggactc	ccaaaactcg	ttcactctgc	gtttatccac	240	
aggataaagc	caccgctggt	acaggtagac	gaaaacacac	acgtcgctcc	ggaagcaggc	300	
cagccggtga	gacgtgggca	tgggtgatgat	gaaggcaaa	agctcatcaa	tgaaggtgtt	360	
gaaagccttg	taggtgaagg	ccttccaggg	cagatgtgcc	actgacttca	acttgtagtt	420	
cacaaagagc	tggggcagca	tgaagaggaa	accaaaggca	tagaccccg	tgacgaagct	480	
gttgattaac	caggagtacc	agctcttata	tttgatattc	aggagtgaat	agacagcacc	540	
cccgcacacg	agagggtaca	gcaggtaatga	caagtaactc	atggcctgag	tatcgctactc	600	
ctcggttttc	ctctcagatt	cgctgttaagt	gccaaactga	aattcgggca	tcaggctctct	660	
ccaaaaaata	gtcatcttca	atgccttctt	cactttccac	agctcaattg	cggctccaac	720	
acccgcgggg	accagcacca	gcaggctcgt	ctgctcgctc	agcaggaaca	gaaagatgac	780	
cacggtgctg	aagcagcgcc	agagcactgc	cttggtggac	atgccgatca	tgctcttctt	840	
cttcttccag	aaactgatgt	cattttttaa	ggccaggaaa	tcaaagagaa	gatggaacgc	900	
tgcagcaaa	aaggtcagcg	ccaggaagta	taagttggta	tctacaaaa	ttcctttcac	960	
ctcatcacga	tgtttctctg	aaaaccgcaa	ctgctgcagg	gagtacacgg	cgtcctgcac	1020	
gtggatccag	aagcgcagcc	gcccagtgga	gaccttgctg	taggacacgg	tgaggggca	1080	
ctcggtggtg	gagcgggtta	tgaccatcag	gtccttcacg	cggttgctga	gctggctgat	1140	
gaacagggatg	ggcaggtaat	gcacgggttt	cccagctgg	atcatcttca	tgtaccgatg	1200	
cacatcggga	ggcagggagg	accggtcaaa	gacaaagttg	tccgccatca	cgttcagcgc	1260	
cagccgcggt	cgccagtggg	acactggctc	atccaggggca	ctcgctggct	tcttctccgc	1320	
ctcgatctgc	tgtgtatcag	actcccgggt	gagcaggttg	atttcttctg	gcttggggac	1380	
catgtagggtg	gtcagaggac	tgaccagggtg	cacctgcttc	ccgctcgctc	acqgcagac	1440	

```

cccagcgtga tggaggaaga tgtaggcata cagcgtccca ttgtttctcg ttttctttgg 1500
tacagaaaca ttaactgtcc tttcaaatgt ggactccaca tcaaagtctt ccacattcaa 1560
gaccaggtcg atgttgttct cagcaccagc gtgggacctc gtcgtggtgt acacgctcag 1620
ctgcagcttg ggccgcccgc ccaggtaggg ctggatgcag ttggcgctcg cggagcacgg 1680
gcgggtgtag acgatgccgt acatgacca gcaggtgtgc accacgtaga ccacgaacac 1740
gcccaccacc aagctggtga aggagctgcg gcccc 1775

```

```

<210> 30
<211> 1546
<212> DNA
<213> Homo sapiens

```

```

<400> 30
aaaataagta ggaatgggca gtgggtattc acattcacta caccttttcc atttgcta 60
aaggccctgc caggctggga ggggaattgt cctgcctgct tctggagaaa gaagatattg 120
acaccatcta cgggcacccat ggaactgctt caagtgacca ttctttttct tctgccaggt 180
atttgagca gtaacagcac aggtgtttta gaggcagcta ataattcact tgttggtact 240
acaacaaaac catctataac aacaccaaac acagaatcat tacagaaaaa tgttgtcaca 300
ccaacaactg gaacaactcc taaaggaaca atcaccaatg aattacttaa aatgtctctg 360
atgtcaacag ctactttttt aacaagtaaa gatgaaggat tgaaagccac aacctgat 420
gtcaggaaga atgactccat catttcaaac gtaacagtaa caagtgttac acttccaaat 480
gctgtttcaa cattacaaag ttccaaaccc aagactgaaa ctgagagttc aattaaaaaca 540
acagaaatac caggtagtgt tctacaacca gatgcacac cttctaaaac tgggtacatta 600
acctcaatac cagttacaat tccagaaaac acctcacagt ctcaagtaat aggcactgag 660
ggtggaaaaa atgcaagcac ttcagcaacc agccggtctt attccagtat tattttgccc 720
gtggttattg ctttgattgt aataacactt tcagtatttg ttctggtggg tttgtaccga 780
atgtgctgga aggcagatcc gggcacacca gaaaatggaa atgatcaacc tcagtctgat 840
aaagagagcg tgaagcttct taccgtaag acaatttctc atgagctctg tgagcactct 900
gcacaaggaa aaaccaagaa ctgacagctt gaggaattct ctccacacct aggcataat 960
tacgcttaat ctccagcttc tatgcaccaa gcgtggaaaa ggagaaagtc ctgcagaatc 1020
aatcccgact tccataacct ctgctggact gtaccagacg tctgtoccag taaagtgatg 1080
tccagctgac atgcaataat ttgatggaat caaaaagaac cccggggctc tctgttctc 1140
tcacatttaa aaattccatt actccattta caggagcgtt cctaggaaaa ggaattttag 1200
gaggagaatt tgtgagcagt gaactgaca gccaggagg tgggctcgct gataggcatg 1260
actttcctta atgtttaaag ttttcggggc caagaatttt tatccatgaa gactttccta 1320
cttttctcgg tgttcttata ttacctactg ttagtattta ttgtttacca ctatgttaat 1380
gcagggaaaa gttgcacgtg tattattaaa tattaggtag aaatcatacc atgctacttt 1440
gtacatataa gtattttatt cctgctttcg tgttactttt aataaataac tactgtactc 1500
aatactctaa aaatactata acatgactgt gaaaatggca aaaaaa 1546

```

```

<210> 31
<211> 750
<212> DNA
<213> Homo sapiens

```

```

<400> 31
cacttgggca cccccatttt ctaaaaaaat ggaaatctgg agggcaaaaa aggtgtgctg 60
aagggaagtg cctctgatgg cccaaaaacc ttcttccaaa ctagtgtagg aatggaatgg 120
atagcaaatg gatccttttt ggccctcctt ggagcatgcc ttccctatct tatccttggc 180
cccactaaag cagaacgtta cggatatttc tgtttttgcc attggatgcc tatctggcca 240
aacagccttt ccctaattgg aaaatgcagt cctgtttaaa acctttgatt tacgactact 300
tgtacatgct tgctcattac aattttgaca ttttttacct agtgaagacc ccaaactat 360
cagtgaacaa tgacaagatc ataaagaaca gtatcatatt attatttagt cgcttttaca 420
gtggcaagcc aattttgaaa tatctcattt aaactcaga cccaattcac tgagttatac 480
ttttaatagc ttccctagca cactatttcc catgcattaa atatgataaa ataactatc 540
actgcccacg ggtcttgtaa aaaggaagtc tgaatacaga gccacaaca ctaaaattgt 600
ttttctagct acaaagtata gcatcatcaa cacagacacg atttggaac cctgacaggt 660
ggattggaaa acggtgttta aagagaagag aacattttta cataaatgtc attaagaatc 720

```

ccaaaggcct tatttgtcac caccgtcccg

750

&lt;210&gt; 32

&lt;211&gt; 1620

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 32

```

gcaattcccc cctcccacta aacgactccc agtaattatg tttacaaccc attggatgca 60
gtgcagccat tcataagaac cttggtgccc cagaaaaatc tgtccttttt ggtaccaaac 120
ctgaggctct ttggaagata atgtagaaaa coactaccta ttgaaggcct gttttggcta 180
atctgtgcaa actctgatga tacctgcctt atgtggattc tttccacac tgctttcatt 240
tttaagtata aagacttaga aaactagaat aatgctttta caaataatta aaagtatgtg 300
atgttctggg ttttttcctt ctttttagaa ccccgctccc atttaaaaaa ttaaaaaaaa 360
aaaaaaaaact ttttaacattt aaaaaataaa aattaacaaa atttcactta ttccaggaca 420
cgctggcatt tggactcaat gaaaagggca cctaaagaaa ataaggctga ctgaatgttt 480
tccataatth tcacacaata acagtccctt tctatccagc ttgccttcca tttatctcta 540
gggttagctt ttcaggcaac atccttggtc attgcccaga aagtacctga gctatcagtg 600
attggaatgg cacaggaaac cgaatcacat ggggtgccctc cccttggttt tcaagtatct 660
tggagtgtgt cacaaaaatt aggtcatgcc ttcagtgtct tgttctttaa acctaccctt 720
tgacaatcag gtgctaataga ttgtatacta ttaaaaccag cacataagta ttgtaaatgt 780
gtgttctctc taggttgtaa gaaatgtctt tcttctatc tgggtcctgt taaagcgggt 840
gtcagttgtg tcttttcacc tcgatttgtg aattaataga attgggggga gaggaatga 900
tgatgtcaat taagtttcag gtttgcatg atcatcattc tcatgatata tctcactttg 960
tcgcaaatct gcccttatcg taagaacaag tttcagaatt ttccctccac tatacgactc 1020
cagtattatg tttacaatcc attggatgag tgcagcatta taagacctg gtgccagaa 1080
aaatctgtcc tttttggtac caaacctgag gtcttttggg agataatgta gaaaaccact 1140
acctattgaa ggctgtttt ggctaactct tgcaaaactc gatgatacct gcttatgtgg 1200
attcttttcc acactgcttt catttttaag tataaagact tagaaaacta gaataatgct 1260
tttacaataa attaaaagta tgtgatgttc tgggtttttt ccttcttttt agaaccctgt 1320
atttaacaaa gccttctttt taagtcttgt ttgaaattta agtctcagat cttctggata 1380
ccaaatcaaa aacccaacgc gtaaaacagg gcagattttg tgttcctaat tttaaaagc 1440
tttatgtata ctctataaat atagatgcac aaacaacact tccccttgag tagcacatca 1500
acatacagca ttgtacatta caatgaaaat gtgttaactta aggggtattat atatataaat 1560
acatatatac ctttgtaacc tttatactgt aaataaaaaa gttgctttag tcaaaaaaaaa 1620

```

&lt;210&gt; 33

&lt;211&gt; 2968

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 33

```

gaaaaagtag aaggaaacac agttcatata gaagtaaaag aaaaccctga agaggaggag 60
gaggaggaag aagaggaaga agaagatgaa gaaagtgaag aggaggagga agaggaggga 120
gaaagtgaag gcagtgaagg tgatgaggaa gatgaaaagg tgtcagatga gaaggattca 180
gggaagacat tagataaaaa gccaaagtaa gaaatgagct cagattctga atatgactct 240
gatgatgatc ggactaaaga agaaagggtc tatgacaaag caaaacggag gattgagaaa 300
cggcgacttg aacatagtaa aaatgtaaac accgaaaagc taagagcccc tattatctgc 360
gtacttgggc atgtggacac aggggaagaca aaaattctag ataagctccg tcacacacat 420
gtacaagatg gtgaagcagg tggtatcaca caacaaattg gggccaccaa tgttctctct 480
gaagctatta atgaacagac taagatgatt aaaaattttg atagagagaa tgtacggatt 540
ccaggaatgc taattattga tactcctggg catgaatctt tcagtaatct gagaaataga 600
ggaagctctc tttgtgacat tgccatttta gttgttgata ttatgcatgg tttggagccc 660
cagacaattg agtctatcaa ccttctcaaa tctaaaaaat gtcccttcat tgttgactct 720
aataagattg atagggtata tgattggaaa aagagtcctg actctgatgt ggctgctact 780
ttaagaagc agaaaaagaa tacaaaagat gaatttgagg agcgagcaaa ggctattatt 840
gtagaatttg cacagcaggg tttgaatgct gctttgtttt atgagaataa agatccccgc 900
acttttgtgt ctttggtacc tacctctgca catactgggtg atggcatggg aagtctgatc 960

```



taccttcttg tagagttaac tcagaccatg ttgagcaaga gacttgcaac ctgtgaagag 1020  
 ctgagagcac aggtgatgga gggttaaagct ctcccgggga tgggcaccac tatagatgtc 1080  
 atcttgatca atgggcgttt gaaggaagga gatacaatca ttgttcctgg agtagaagg 1140  
 cccattgtaa ctcagattcg aggctcctg ttacctctc ctatgaagga attacgagtg 1200  
 aagaaccagt atgaaaagca taaagaagta gaagcagctc agggggtaaa gattcttggg 1260  
 aaagacctgg agaaaacatt ggctgggtta cccctccttg tggcttataa agaagatgaa 1320  
 atccctgttc ttaaagatga attgatccat gagttaaagc agacactaaa tgctatcaaa 1380  
 ttagaagaaa aaggagtcta tgtccaggca tctacactgg gttctttgga agctctactg 1440  
 gaatttctga aaacatcaga agtgccctat gcaggaatta acattggccc agtgcataaa 1500  
 aaagatgtta tgaaggcttc agtgatgttg gaacatgacc ctcagtatgc agtaattttg 1560  
 gccttcgatg tgagaattga acgagatgca caagaaatgg ctgatagttt aggagttaga 1620  
 atttttagtg cagaaattat ttatcattta tttgatgcct ttacaaaata tagacaagac 1680  
 tacaagaaac agaaacaaga agaatttaag cacatagcag tatttccctg caagataaaa 1740  
 atcctccctc agtacatttt taattctcga gatccgatag tgatgggggt gacggtgga 1800  
 gcaggtcagg tgaacacagg acaccccatg tgtgtcccaa gcaaaaattt tgttgacatc 1860  
 ggaatagtaa caagtattga aataaaccat aaacaagtgg atgttgcaaa aaaaggacaa 1920  
 gaagtttgatg taaaaataga acctatccct ggtgagtcac ccaaaatgtt tggaagacat 1980  
 tttgaagcta cagatattct tgttagtaag atcagccggc agtccattga tgcactcaaa 2040  
 gactggttca gagatgaaat gcagaagagt gactggcagc ttattgtgga gctgaagaaa 2100  
 gtatttgaat tcatctaatt ttttcacatg gagcaggaac tggagtaaat gcaatactgt 2160  
 gttgtaatat cccaacaaa aaatggaaca gacgtatttg gacactgatg 2220  
 gacttaagta tgggaaggaag aaaaataggt gtataaaatg ttttccatga gaaaccaaga 2280  
 aacttacact ggtttgacag tggtcagtta catgtccca cagttccaat gtgctgttgc 2340  
 actcacctct ccttcccca accttctct acttggtgc tgttttaaag tttgccttgc 2400  
 cccaaatttg gatttttatt acagatctaa agctctttcg attttatact gattaaatca 2460  
 gtactgcagt atttgattaa aaaaaaaaaa gcagattttg tgattcttgg gacttttttg 2520  
 acgtaagaaa tacttcttta tttatgcata ttcttccac agtgattttt ccagcattct 2580  
 tctgccatat gccttttagg cttttataaa atagaaaatt aggcattctg atatttctt 2640  
 agctgctttg tgtgaaacca tgggtgtaaaa gcacagctgg ctgcttttta ctgcttgtgt 2700  
 agtcacgagt ccattgtaat catcacaatt ctaaaccaaa ctaccaataa agaaaacaga 2760  
 catccaccag taagcaagct ctgttaggct tccatgggta gtggtagctt ctctccaca 2820  
 agttgtcctc ctaggacaag gaattatctt aacaaactaa actatccatc acactacctt 2880  
 ggtatgccag cacctgggta acagtaggag attttataca ttaatctgat ctgtttaatc 2940  
 tgatcggttt agtagagatt ttatacat 2968

<210> 34

<211> 6011

<212> DNA

<213> Homo sapiens

<400> 34

acggggcgcc ggacgacccg cacatcttat cctccacgcc ccactcgac tccgagcggg 60  
 accgccccgg actccccctc gggccggcca ctcgaggagt gaggagagag gccgcccggc 120  
 cggcttgagc cgagcgcagc acccccgcgc ccccgcgcca gaagtttggg tgaaccgggc 180  
 tgccgggaga aacttttttc ttttttcccc ctctccgggg agagtctctg gaggaggagg 240  
 ggaactcccc cggcccaagg ctcggtgggt cggggctcgc cggccgcaga aggggcgggg 300  
 tccgcccgcg aggggagggc cccccgggga cccgagaggg gggtagggac cgcgggctgc 360  
 tgggtcgggc gcggcagcgt gtgccccgcg caggggaggg gccgccccgc tcccggcccc 420  
 gctgcgagga ggaggcggcg gcggcgcagg aggatgtact tggtaggggg ggacaggggg 480  
 ttggccgggt gcgggcacct cctggtctcg ctgctggggc tgctgctgct gccggcgcgc 540  
 tccggcaccc gggcgctggg ctgctgccc tgtgacgagt ccaagtgcga ggagcccagg 600  
 aaccgcccgg ggagcatcgt gcaggcgctc tgcggctgct gctacacgtg cgccagccag 660  
 gggaacgaga gctgcggcgg caccttcggg atttacggaa cctgcgaccg ggggctgcgt 720  
 tgtgtcatcc gcccccgct caatggcgac tccctcaccg agtacgaagc gggcgtttgc 780  
 gaagatgaga actggactga tgaccaactg cttgggtttta aaccatgcaa tgaaaacctt 840  
 attgctgggt gcaatataat caatgggaaa tgtgaatgta acaccattcg aacctgcagc 900  
 aatccctttg agtttccaag tcaggatatg tgcctttcag cttaaagag aattgaagaa 960  
 gagaagccag attgctccaa ggcccgcgtg gaagtccagt tctctccacg ttgtcctgaa 1020



gactgtttgg ggattctttt tctttattat atactgattc tacaaaaatag aaactacttc 4560  
 attttaattg tatattattc aagcaccttt gttgaagctc aaaaaaatg atgcctcttt 4620  
 aaacttttagc aattatagga gtatttatgt aactatctta tgcttcaaaa aacaaaagta 4680  
 tttgtgtgca tgtgtatata atatatatat atacatatat atttatacac atacaattta 4740  
 tgttttcctg ttgaatgtat ttttatgaga ttttaaccag aacaaaggca gataaacagg 4800  
 cattccatag cagtgccttt gatcacttac aaatcttttg aataacacaa aatctcattc 4860  
 tacctgcagt ttaattggaa agatgtgtgt gtgagagtat gtatgtgtgt gtgtgtgtgt 4920  
 gtgtgtgccc gcgcacgcac gccttgagca gtcagcattg cacctgctat ggagaagggg 4980  
 attcctttat taaaatcttc ctcatcttga tttgctttca gttgggtttc aatttgctca 5040  
 ctggccagag acattgatgg cagttcttat ctgcactact aatcagctcc tggatttttt 5100  
 tttttttttt tcaacaatg gtttgaaaca actactggaa tattgtccac aataagctgg 5160  
 aagtttggtg tagtatgcct caaatataac tgactgtata ctatagtggg aacttttcaa 5220  
 acagccctta gcacttttat actaattaac ccatttgtgc attgagtttt cttttaaaaa 5280  
 tgcttggtgt gaaagacaca gataccagc atgcttaacg tgaaaagaaa atgtgttctg 5340  
 tttgttaaag gaactttcaa gtattgttgt aaatacttgg acagaggttg ctgaacttta 5400  
 aaaaaaatta atttattatt ataatacctt aattttattaa tctgaagatt aaccattttt 5460  
 ttgtcttaga atatcaaaaa gaaaaagaaa aaggtgttct agctgtttgc atcaaaggaa 5520  
 aaaaagattt attatcaagg ggcaatatat ttatcttttc caaaataaat ttgttaatga 5580  
 tacattacaa aaatagattg acatcagcct gattagtata aattttgttg gtaattaatc 5640  
 cattcctggc ataaaaagtc tttatcaaaa aaaattgtag atgcttgctt tttgtttttt 5700  
 caatcatggc catattatga aaatactaac aggatatagg acaagggtga aattttttta 5760  
 ttattatttt aaagatatga tttatcctga gtgctgtatc tattactctt ttactttggg 5820  
 tctgtgtgtg ctcttgtaaa agaaaaatat aatttcctga agaataaaat agatatatgg 5880  
 cacttgaggt gcatcatagt tctacagttt gtttttgttt tcttcaaaaa agctgtaaga 5940  
 gaattatctg caacttgatt cttggcagga aataaacatt ttgagttgaa atcaaaaaaa 6000  
 aaaaaaaaaa a 6011

<210> 35

<211> 1036

<212> PRT

<213> Homo sapiens

<400> 35

Met Tyr Leu Val Ala Gly Asp Arg Gly Leu Ala Gly Cys Gly His Leu  
 1 5 10 15

Leu Val Ser Leu Leu Gly Leu Leu Leu Leu Pro Ala Arg Ser Gly Thr  
 20 25 30

Arg Ala Leu Val Cys Leu Pro Cys Asp Glu Ser Lys Cys Glu Glu Pro  
 35 40 45

Arg Asn Arg Pro Gly Ser Ile Val Gln Gly Val Cys Gly Cys Cys Tyr  
 50 55 60

Thr Cys Ala Ser Gln Gly Asn Glu Ser Cys Gly Gly Thr Phe Gly Ile  
 65 70 75 80

Tyr Gly Thr Cys Asp Arg Gly Leu Arg Cys Val Ile Arg Pro Pro Leu  
 85 90 95

Asn Gly Asp Ser Leu Thr Glu Tyr Glu Ala Gly Val Cys Glu Asp Glu  
 100 105 110

Asn Trp Thr Asp Asp Gln Leu Leu Gly Phe Lys Pro Cys Asn Glu Asn  
 115 120 125

Leu Ile Ala Gly Cys Asn Ile Ile Asn Gly Lys Cys Glu Cys Asn Thr  
 130 135 140  
 Ile Arg Thr Cys Ser Asn Pro Phe Glu Phe Pro Ser Gln Asp Met Cys  
 145 150 155 160  
 Leu Ser Ala Leu Lys Arg Ile Glu Glu Glu Lys Pro Asp Cys Ser Lys  
 165 170 175  
 Ala Arg Cys Glu Val Gln Phe Ser Pro Arg Cys Pro Glu Asp Ser Val  
 180 185 190  
 Leu Ile Glu Gly Tyr Ala Pro Pro Gly Glu Cys Cys Pro Leu Pro Ser  
 195 200 205  
 Arg Cys Val Cys Asn Pro Ala Gly Cys Leu Arg Lys Val Cys Gln Pro  
 210 215 220  
 Gly Asn Leu Asn Ile Leu Val Ser Lys Ala Ser Gly Lys Pro Gly Glu  
 225 230 235 240  
 Cys Cys Asp Leu Tyr Glu Cys Lys Pro Val Phe Gly Val Asp Cys Arg  
 245 250 255  
 Thr Val Glu Cys Pro Thr Val Gln Gln Thr Ala Cys Pro Pro Asp Ser  
 260 265 270  
 Tyr Glu Thr Gln Val Arg Leu Thr Ala Asp Gly Cys Cys Thr Leu Pro  
 275 280 285  
 Thr Arg Cys Glu Cys Leu Ser Gly Leu Cys Gly Phe Pro Val Cys Glu  
 290 295 300  
 Val Gly Ser Thr Pro Arg Ile Val Ser Arg Gly Asp Gly Thr Pro Gly  
 305 310 315 320  
 Lys Cys Cys Asp Val Phe Glu Cys Val Asn Asp Thr Lys Pro Ala Cys  
 325 330 335  
 Val Phe Asn Asn Val Glu Tyr Tyr Asp Gly Asp Met Phe Arg Met Asp  
 340 345 350  
 Asn Cys Arg Phe Cys Arg Cys Gln Gly Gly Val Ala Ile Cys Phe Thr  
 355 360 365  
 Ala Gln Cys Gly Glu Ile Asn Cys Glu Arg Tyr Tyr Val Pro Glu Gly  
 370 375 380  
 Glu Cys Cys Pro Val Cys Glu Asp Pro Val Tyr Pro Phe Asn Asn Pro  
 385 390 395 400  
 Ala Gly Cys Tyr Ala Asn Gly Leu Ile Leu Ala His Gly Asp Arg Trp  
 405 410 415  
 Arg Glu Asp Asp Cys Thr Phe Cys Gln Cys Val Asn Gly Glu Arg His  
 420 425 430

Cys Val Ala Thr Val Cys Gly Gln Thr Cys Thr Asn Pro Val Lys Val  
 435 440 445  
 Pro Gly Glu Cys Cys Pro Val Cys Glu Glu Pro Thr Ile Ile Thr Val  
 450 455 460  
 Asp Pro Pro Ala Cys Gly Glu Leu Ser Asn Cys Thr Leu Thr Arg Lys  
 465 470 475 480  
 Asp Cys Ile Asn Gly Phe Lys Arg Asp His Asn Gly Cys Arg Thr Cys  
 485 490 495  
 Gln Cys Ile Asn Thr Gln Glu Leu Cys Ser Glu Arg Lys Gln Gly Cys  
 500 505 510  
 Thr Leu Asn Cys Pro Phe Gly Phe Leu Thr Asp Ala Gln Asn Cys Glu  
 515 520 525  
 Ile Cys Glu Cys Arg Pro Arg Pro Lys Lys Cys Arg Pro Ile Ile Cys  
 530 535 540  
 Asp Lys Tyr Cys Pro Leu Gly Leu Leu Lys Asn Lys His Gly Cys Asp  
 545 550 555 560  
 Ile Cys Arg Cys Lys Lys Cys Pro Glu Leu Ser Cys Ser Lys Ile Cys  
 565 570 575  
 Pro Leu Gly Phe Gln Gln Asp Ser His Gly Cys Leu Ile Cys Lys Cys  
 580 585 590  
 Arg Glu Ala Ser Ala Ser Ala Gly Pro Pro Ile Leu Ser Gly Thr Cys  
 595 600 605  
 Leu Thr Val Asp Gly His His His Lys Asn Glu Glu Ser Trp His Asp  
 610 615 620  
 Gly Cys Arg Glu Cys Tyr Cys Leu Asn Gly Arg Glu Met Cys Ala Leu  
 625 630 635 640  
 Ile Thr Cys Pro Val Pro Ala Cys Gly Asn Pro Thr Ile His Pro Gly  
 645 650 655  
 Gln Cys Cys Pro Ser Cys Ala Asp Asp Phe Val Val Gln Lys Pro Glu  
 660 665 670  
 Leu Ser Thr Pro Ser Ile Cys His Ala Pro Gly Gly Glu Tyr Phe Val  
 675 680 685  
 Glu Gly Glu Thr Trp Asn Ile Asp Ser Cys Thr Gln Cys Thr Cys His  
 690 695 700  
 Ser Gly Arg Val Leu Cys Glu Thr Glu Val Cys Pro Pro Leu Leu Cys  
 705 710 715 720  
 Gln Asn Pro Ser Arg Thr Gln Asp Ser Cys Cys Pro Gln Cys Thr Asp  
 725 730 735

Gln Pro Phe Arg Pro Ser Leu Ser Arg Asn Asn Ser Val Pro Asn Tyr  
 740 745 750  
 Cys Lys Asn Asp Glu Gly Asp Ile Phe Leu Ala Ala Glu Ser Trp Lys  
 755 760 765  
 Pro Asp Val Cys Thr Ser Cys Ile Cys Ile Asp Ser Val Ile Ser Cys  
 770 775 780  
 Phe Ser Glu Ser Cys Pro Ser Val Ser Cys Glu Arg Pro Val Leu Arg  
 785 790 795 800  
 Lys Gly Gln Cys Cys Pro Tyr Cys Ile Lys Asp Thr Ile Pro Lys Lys  
 805 810 815  
 Val Val Cys His Phe Ser Gly Lys Ala Tyr Ala Asp Glu Glu Arg Trp  
 820 825 830  
 Asp Leu Asp Ser Cys Thr His Cys Tyr Cys Leu Gln Gly Gln Thr Leu  
 835 840 845  
 Cys Ser Thr Val Ser Cys Pro Pro Leu Pro Cys Val Glu Pro Ile Asn  
 850 855 860  
 Val Glu Gly Ser Cys Cys Pro Met Cys Pro Glu Met Tyr Val Pro Glu  
 865 870 875 880  
 Pro Thr Asn Ile Pro Ile Glu Lys Thr Asn His Arg Gly Glu Val Asp  
 885 890 895  
 Leu Glu Val Pro Leu Trp Pro Thr Pro Ser Glu Asn Asp Ile Val His  
 900 905 910  
 Leu Pro Arg Asp Met Gly His Leu Gln Val Asp Tyr Arg Asp Asn Arg  
 915 920 925  
 Leu His Pro Ser Glu Asp Ser Ser Leu Asp Ser Ile Ala Ser Val Val  
 930 935 940  
 Val Pro Ile Ile Ile Cys Leu Ser Ile Ile Ile Ala Phe Leu Phe Ile  
 945 950 955 960  
 Asn Gln Lys Lys Gln Trp Ile Pro Leu Leu Cys Trp Tyr Arg Thr Pro  
 965 970 975  
 Thr Lys Pro Ser Ser Leu Asn Asn Gln Leu Val Ser Val Asp Cys Lys  
 980 985 990  
 Lys Gly Thr Arg Val Gln Val Asp Ser Ser Gln Arg Met Leu Arg Ile  
 995 1000 1005  
 Ala Glu Pro Asp Ala Arg Phe Ser Gly Phe Tyr Ser Met Gln Lys Gln  
 1010 1015 1020  
 Asn His Leu Gln Ala Asp Asn Phe Tyr Gln Thr Val  
 1025 1030 1035

<210> 36  
 <211> 716  
 <212> DNA  
 <213> Homo sapiens

<400> 36  
 gcagtacctg gagtgtcctg caggggggaaa gcgaaccggg ccctgaagtc cggggcagtc 60  
 acccggggct cctgggcccgc tctgccgggc tggggctgag cagcgatcct gctttgtccc 120  
 agaagtccag agggatcagc cccagaacac accctcctcc ccgggacgcc gcagctttct 180  
 ggaggctgag gaaggcatga agagtgggct ccacctgctg gccgactgag aaaagaattt 240  
 ccagaactcg gtcctatattt acagattgag aaactatggg tcaagaagag aggacggggc 300  
 ttgagggaat ctcttgattc tocttatatg acctcaaact gaccatacta aacagtgtag 360  
 aaggtctttt taaggctcta aatgtcaggg tctcccatcc cctgatgcct gacttgtaca 420  
 gtcagtgtgg agtagacggg ttctccacc cagggttgac tcagggggat gatctgggtc 480  
 ccattctggg cttaagacc caaacaaggg ttttttcagc tccaggatct ggagcctcta 540  
 tctggttagt gtcgtaacct ctgtgtgcct cccgttacc catctgtcca gtgagctcag 600  
 cccccatcca cctaacaggg tggccacagg gattactgag ggtaagacc ttagaactgg 660  
 gtctagcacc cgataagagc tcaataaatg ttgttccttt ccacatcaaa aaaaaa 716

<210> 37  
 <211> 395  
 <212> DNA  
 <213> Homo sapiens

<400> 37  
 ccaatacttc attcttcatt ggtggagaag attgtagact tctaagcatt ttccaaataa 60  
 aaaagctatg atttgatttc caacttttaa acattgcatg tcctttgcca ttactacat 120  
 tctccaaaaa aaccttgaat tgaagaaggc cacccttaaa atacttcaga ggctgaaaaat 180  
 atgattatta cattggaatc ctttagccta tgtgatattt ctttaacttt gcactttcac 240  
 gccagtaaaa accaaagtca gggtaaccaa tgtcatttta caaatgtta aaaccctaata 300  
 tgcagttcct tttttaaat attttaaaga ttacttaaca acattagaca gtgcaaaaaa 360  
 agaagcaagg aaagcattct taattctacc atcct 395

<210> 38  
 <211> 134  
 <212> DNA  
 <213> Homo sapiens

<400> 38  
 ccctcgagcg gccgcccggg caggtacttt taccaccgaa ttgttcactt gactttaaga 60  
 aaccataaaa gctgcctggc ttccagcaac aggcctatca acaccatggg gactctccat 120  
 aaggacacc gtgt 134

<210> 39  
 <211> 644  
 <212> DNA  
 <213> Homo sapiens

<400> 39  
 aagcctgttg tcatggggga ggtggtggcg cttggtggcc actggcgccc gaggtagagg 60  
 cagtggcgct tgagtgggc gggggcagcg gcagatttga ggcttaagca acttcttccg 120  
 gggaagagtg ccagtgcagc cactgttaca attcaagatc ttgatctata tccatagatt 180  
 ggaatatttg tgggccagca atcctcagac gcctcactta ggacaaatga ggaaactgag 240  
 gcttggtgaa gttacgaaac ttgtccaaaa tcacacaact tgtaaagggc acagccaaga 300  
 ttcagagcca ggctgtaaaa attaaaatga acaaattacg gcaaagtttt aggagaaaga 360  
 aggatgttta tggtccagag gccagtcgct cacatcagtg gcagacagat gaagaaggcg 420  
 ttgcgaccgg aaaatgtagc ttcccgtta agtaccttgg ccatgtagaa gttgatgaat 480  
 caagaggaat gcacatctgt gaagatgctg taaaaagatt gaaagctgaa aggaagttct 540

tcaaaggctt ctttggaata actggaaaga aagcagttta agcagtttct gtgggtctaa 600  
gcagatggac tcagaggttg tggatgaaaa actaaggacc tcac 644

<210> 40  
<211> 657  
<212> DNA  
<213> Homo sapiens

<400> 40  
ctttttgttt gggttttcca atgtagatgt ctacgtgaaa tgtgcagata tactttgttc 60  
cttatatggt caccagtgtt aattatggac aaatacatta aaacaagggc tcctggccca 120  
gcctcccatc taatctcttt gatactcttg gaatctaagt ctgaggagcg atttctgaat 180  
tagccagtgt tgtaccaact ttctgttagg aattgtatta gaataacctt tctttttcag 240  
acctgtcag tgagacatct tggggaatga agtaggaaaa tagacatttg gtggaaaaac 300  
agcaaaatga gaacattaaa aagactcatt caagtatgag tataaagggc atggaaattc 360  
tgggtcctttg agcaaaatga gaagaaaaaa ttctgctcag cagtattcac tgtgttaaga 420  
ttttttgttt tttacacgaa tggaaaaaat atgtgtaagt ggtatagatt ttaatcagct 480  
aacagtcact ccagagattt tgatcagcac caattcctat agtagtaagt atttaaaagt 540  
taagaaatac tactacattt aacattataa agtagagttc tggacataac tgaaaattag 600  
atgtttgctt caatagaaat ttgttcccac ttgtattttc aacaaaatta tcggaac 657

<210> 41  
<211> 1328  
<212> DNA  
<213> Homo sapiens

<400> 41  
acaattttta aataactagc aattaatcac agcatatcag gaaaaagtac acagtgaagt 60  
ctgggttagtt tttgtaggct cattatgggt agggctgtta agatgtatat aagaacctac 120  
ctatcatgct gtatgtatca ctcatccat ttcatgttc catgcatact cgggcatcat 180  
gctaatatgt atccttttaa gcaactctca ggaaacaaaa gggcctttta tttttataaa 240  
ggtaaaaaaa attcccaaaa tattttgcac tgaatgtacc aaagggtgaag ggacattaca 300  
atatgactaa cagcaactcc atcacttgag aagtataata gaaaatagct tctaaatcaa 360  
acttcttca cagtgcctgt tctaccacta caaggactgt gcatctaagt aataattttt 420  
taagattcac tatatgtgat agtatgatat gcattttatt aaaatgcatt agactctctt 480  
ccatccatca aatactttac aggatggcat ttaatacaga tatttcgtat ttccccact 540  
gctttttatt tgtacagcat cattaaacac taagctcagt taaggagcca tcagcaaacac 600  
tgaagagatc agtagtaaga attccatttt ccctcatcag tgaagacacc acaaattgaa 660  
actcagaact atatttctaa gctgcattt tcactgatgc ataattttct tagtaaatatt 720  
aagagacagt ttttctatgg catctccaaa actgcagac atcactagtc ttacttctgc 780  
ttaattttat gagaaggat tcttcatttt aattgctttt gggattactc cacatctttg 840  
tttatttctt gactaatcag attttcaata gagtgaagtt aaattggggg tcataaaagc 900  
attggattga catatggttt gccagcctat gggtttacag gcattgcca aacatttctt 960  
tgagatctat atttataagc agccatggaa ttcttattat gggatgttgg caatcttaca 1020  
ttttatagag gtcatatgca tagttttcat aggtgttttg taagaactga ttgctctcct 1080  
gtgagttaag ctatgtttac tactgggacc ctcaagagga ataccactta tgttactc 1140  
ctgcactaaa ggcacgtact gcagtgtgaa gaaatgttct gaaaaagggc tatagaaatc 1200  
tggaaataag aaaggaagag ctctctgtat tctataattg gaagagaaaa aaagaaaaac 1260  
ttttaactgg aaatgttagt ttgtacttat tgatcatgaa tacaagtata tatttaattt 1320  
tgaaaaaa 1328

<210> 42  
<211> 987  
<212> DNA  
<213> Homo sapiens

<400> 42  
aacagagact ggcacaggac ctcttcattg caggaagatg gtagtgtagg caggtaacat 60



```

tgagctcttt tcaaaaaagg agagctcttc ttcaagataa ggaagtggta gttatgggtg 120
taacccccgg ctatcagtcg ggatggttgc caccctcct gctgtaggat ggaagcagcc 180
atggagtggg agggaggcgc aataagacac cctccacag agcttggcat catgggaagc 240
tggttctacc tcttctggc tctttgttt aaaggcctgg ctgggagcct tcttttggg 300
tgtctttctc ttctccaacc aacagaaaaa actgctcttc aaaggtggag ggtcttcag 360
aaacacagct gccaggagcc caggcacagg gctgggggcc tggaaaaagg agggcacaca 420
ggaggaggga ggagctggta gggagatgct ggctttacct aaggtctcga aacaaggagg 480
gcagaatagg cagaggcctc tccgtcccag gccattttt gacagatggc gggacggaaa 540
tgcaatagac cagcctgcaa gaaagacatg tgttttgatg acaggcagtg tggccgggtg 600
gaacaagcac aggccttgga atccaatgga ctgaatcaga accctaggcc tgccatctgt 660
cagccgggtg acctgggtca attttagcct ctaaaagcct cagtctcctt atctgcaaaa 720
tgaggcttgt gatacctgtt ttgaagggtt gctgagaaaa ttaaagataa gggatatcaa 780
aatagtctac ggccatacca cctgaacgt gcctaatact gtaagctaag cagggtcagg 840
cctggttagt acctggatgg ggagagtatg gaaaacatac ctgcccgag ttggagtgg 900
actctgtctt aacagtagcg tggcacacag aaggcactca gtaaatactt gttgaataaa 960
tgaagtagcg atttgggtgtg aaaaaaa 987

```

<210> 43

<211> 956

<212> DNA

<213> Homo sapiens

<400> 43

```

cggacgggtg ggcggacgcg tgggtgcagg agcaggggcg ctgccgactg ccccaaccaa 60
ggaaggagcc cctgagtcgg cctgcgcctc catccatctg tccggccaga gccggcatcc 120
ttgectgtct aaagccttaa ctaagactcc cgccccgggc tggccctgtg cagaccttac 180
tcaggggatg tttacctggt tctcgggaag gggccgggga gggggcacgg 240
caggcgtgtg gcagccacac gcaggcggcc agggcgccca gggacccaaa gcaggatgac 300
cacgcacctc cacgccactg cctccccga atgcatttgg aaccaaagtc taaactgagc 360
tcgcagcccc cgcgccctcc ctccgcctcc catcccgctt agcgtctctg acagatggac 420
gcaggccctg tccagccccc agtgcgctcg ttccggctcc cacagactgc cccagccaac 480
gagattgtcg gaaaccaagt caggccagggt gggcggaaca aagggccagg tgccggctgg 540
ggggaacgga tgctccgagg actggactgt tttttcaca catcgttgcc gcagcgttg 600
gaaggaaaagg cagatgtaaa tgatgtgttg gtttacaggg tatatttttg ataccttcaa 660
tgaattaatt cagatgtttt acgcaaggaa ggacttacc agtattactg ctgctgtgct 720
tttgatctct gcttaccgtt caagaggcgt gtgcaggccg acagtcggtg accccatcac 780
tcgcaggacc aaggggggcg ggactgctgg ctacgcccc gctgtgtcct cctccccctc 840
ccttccttgg gcagaatgaa ttcatgctg attctgtggc cgccatctgc gcagggtgg 900
ggtattctgt catttacaca cgtcgttcta attaaaaagc gaattatact ccaaaa 956

```

<210> 44

<211> 536

<212> DNA

<213> Homo sapiens

<400> 44

```

aaataaacac ttccataaca ttttgttttc gaagtctatt aatgcaatcc cacttttttc 60
cccctagttt cttaatgtta aagagagggg aaaaaaggct caggatagtt ttcacctcac 120
agtgttagct gtcttttatt ttactcttgg aaatagagac tccattaggg ttttgacatt 180
ttgggaaccc agttttacca ttgtgtcagt aaaacaataa gatagtttga gagcatatga 240
tctaaataaa gacatttgaa gggttagttt gaattctaaa agtaggtaat agccaaatag 300
cattctcatc ccttaacaga caaaaactta tttgtcaaaa gaattagaaa aggtgaaaat 360
atTTTTTcca gatgaaactt gtgccacttc caattgacta atgaaataca aggagacaga 420
ctggaaaaag tgggttatgc cacctttaaa accctttctg gtaaataatta tggtagctaa 480
aggggtgggtt ccccgccacc tggacctgga caggtagggg tccgtgggta accagt 536

```

<210> 45

<211> 1630

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 45

```

ggggaggagac gagtatggaa ccctgaaggt agcaagtcca ggactgggcc tgaccatccg 60
gctccctggg caccaagtcc caggcaggag cagctgtttt ccatcccttc ccagacaagc 120
tctattttta tcacaatgac ctttagagag gtctcccagg ccagctcaag gtgtcccact 180
atcccctctg gaggaagag gcaggaaaat tctcccggg tccctgtcat gctactttct 240
ccatcccagt tcagactgtc caggacatct tatctgcagc cataagagaa ttataaggca 300
gtgatttccc ttaggcccag gacttgggcc tccagctcat ctgttccttc tgggcccatt 360
catggcagggt tctgggctca aagctgaact ggggagagaa gagatacaga gctaccatgt 420
gactttacct gattgccctc agtttggggg tgcttattgg gaaagagaga gacaaagagt 480
tacttggtac gggaaatatg aaaagcatgg ccaggatgca tagaggagat tctagcaggg 540
gacaggattg gctcagatga cccctgaggg ctctccaggt cttgaaatgc attccatgat 600
attaggaagt cgggggtggg tgggtggtgg gggctagtgg gggttgaatt taggggccga 660
tgagcttggg tacgtgagca ggggtgtaag ttaggggtctg cctgtatttc tgggtccctt 720
ggaaatgtcc ccttcttcag tgtcagacct cagtcacagt gtccatateg tgcccagaaa 780
agtagacatt atcctgcccc atcccttccc cagtgcactc tgacctagct agtgcctggg 840
gcccagtgac ctgggggagc ctgggtgcag gccctcactg gttccctaaa ccttgggtggc 900
tgtgattcag gtccccaggg gggactcagg gaggaatatg gctgagttct gtagtttcca 960
gagttggctg gttaggcctt cttagaggttc agaattattag cttcaggatc agctgggggt 1020
atggaattgg ctgaggatca aacgtatgta ggtgaaagga taccaggatg ttgctaagg 1080
tgaggagacag tttgggtttg ggacttacca ggggtgatgt agatctggaa cccccaagt 1140
aggctggaag gagttaaggt cagtatggaa gatagggttg ggacagggtg ctttggaatg 1200
aaagagtgaac cttagagggc tcttggggcc tcaggaatgc tccctgctgt gtgaagatga 1260
gaagggtgctc ttactcagtt aatgatgagt gactatattt accaaagccc ctacctgctg 1320
ctgggtccct tgtagcacag gagactgggg ctaaggggcc ctcccaggga agggacacca 1380
tcaggcctct ggctgaggca gtagcataga ggatccattt ctacctgcat tcccagagg 1440
actagcagga ggcagccttg agaaaccggc agttcccaag ccagcgctg gctgttctct 1500
cattgtcact gccctctccc caacctctcc tctaaccac tagagattgc ctgtgtcctg 1560
cctcttgctc cttgtagaat gcagctctgg ccctcaataa atgcttcctg cattcatctg 1620
caaaaaaaaaa                                     1630

```

&lt;210&gt; 46

&lt;211&gt; 169

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 46

```

tcttttgctt ttagcttttt atttttgtat taacaggagt cttattacac ataggtctga 60
taaaactggg ttatgatctt cagtctgatt ccagtgtgct ataactagat aacgtatgaa 120
ggaaaaacga cgacgaacaa aaaagtaagt gcttgggaaga cttagttga 169

```

&lt;210&gt; 47

&lt;211&gt; 769

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 47

```

tgcaggtcac atttactatc ggcaataaaa ggaagcaag cagtattaag cagcgggtgga 60
atttgtcgct ttcacttttt ataaagtgc acataaaatg tcatatttcc aaatttaaaa 120
acataactcc agttcttacc atgagaacag catggtgatc acgaaggatc ttcttgaaaa 180
aaacaaaaac aaaaacaaaa aacaatgatc tcttctgggt atcacatcaa atgagatata 240
aagggtgtact aggcaatctt agagatctgg caacttattt tataataaag gcatctgtga 300
ccaagagacg ttatgaatta aatgtacaaa tgtattatgt ataaatgtat taaatgcaag 360
cttcatataa tgacaccaat gtctctaagt tgctcagaga tcttgactgg ctgtggccct 420
ggccagctcc tttcttgata gtctgattct gcttcatat ataggcagct cctgatcatc 480
catgccagtg aatgagaaaa caagcatgga atatataaac ttttaacatta aaaaatgttt 540

```

tattttttaa	taaaatcaaa	tttccattg	aaaccttcaa	aaactttgca	gaatgaggtt	600
ttgatatatg	tgtacaagta	gtaccttctt	agtgcagaa	aacatcatta	tttctgtctg	660
cctgcctttt	tgttttttaa	aatgaagact	atcattgaaa	caagtttgtc	ttcagtatca	720
ggacatgttg	acggagagga	aaggtaggaa	agggttaggg	atagaagcc		769

&lt;210&gt; 48

&lt;211&gt; 2529

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 48

tttagttcat	agtaatgtaa	aaccatttgt	ttaattctaa	atcaaatac	tttcacaaca	60
gtgaaaatta	gtgactgggt	aagggtgtgc	actgtacata	tcatcathtt	ctgactgggg	120
tcaggacctg	gtcctagtc	acaagggtgg	caggaggagg	gtggaggcta	agaacacaga	180
aaacacacaa	aagaaaggaa	agctgccttg	gcagaaggat	gaggtggtga	gcttgccgag	240
ggatggtggg	aagggggctc	cctgttgggg	ccgagccagg	agtcccaagt	cagctctcct	300
gccttactta	gctcctggca	gagggtagt	ggggacctac	gaggttcaaa	atcaaattggc	360
atgttgccag	cctggcttta	ctaacagggt	cccagagtgc	ctctgttggc	tgagctctcc	420
tgggctcact	ccatttccatt	gaagagtcca	aatgattcat	tttctaccc	acaacttttc	480
attattcttc	tggaaccaca	tttctgttga	gtccatctga	cttaagtcct	ctctccctcc	540
actagtggg	gccactgcac	tgaggggggt	cccaccaatt	ctctctagag	aagagacact	600
ccagaggccc	ctgcaacttt	gcggatttcc	agaagggtgat	aaaaagagca	ctcttgagt	660
ggtgccagg	aatgttttaa	atctatcagg	cacactataa	agctggtggt	ttcttccctac	720
caagtggatt	cggcatatga	accacctact	caatacttta	tattttgtct	gtttaaacac	780
tgaactctgg	tggtgacagg	tacaaaggag	aagagatggg	gactgtgaag	aggggagggc	840
ttccctcatc	ttcctcaaga	tctttgtttc	cataaactat	gcagtcataa	ttgagaaaaa	900
gcaatagatg	gggttcccta	ccatttgggt	gttattgctg	gggttagcca	ggagcagtgt	960
ggatggcaaa	gtaggagaga	ggcccagagg	aaagcccatt	tccctccagc	tttgggtct	1020
ccagaaagag	gctggatttc	tgggatgaag	cctagaaggc	agagcaagaa	ctgttccacc	1080
aggtgaacag	tcctacctgc	ttgggtaccat	agtcctctca	taagattcag	aggaagaagc	1140
ttatgaaact	gaaaatcaaa	tcaagggtatt	gggaagaata	atttcccctc	gattccacag	1200
gaggggaagc	cacacaatat	cattgtgctg	gggtcccca	aggccctgcc	acctggcttt	1260
acaaatcatc	aggggttgcc	tgcttggcct	tcacatgctt	ccctgggttt	agcacacata	1320
caaggagt	tcagggaact	ctatcaagcc	ataccaaaat	cagggtcaca	tgtgggtttc	1380
ccctttcctt	gcctcttcat	aaaagacaac	ttggcttctg	aggatgggtg	tcttttgcac	1440
gcagttgggc	tgacctgaca	aagccccag	tttctgtggg	caggttctgg	gagaggatgc	1500
attcaagctt	ctgcagccta	ggggacaggg	ctgcttggtc	agttattact	gcctcggagc	1560
tccaaatccc	accaaagtcc	tgactccagg	tcttttctaa	tgacagtag	tcagtctcag	1620
cttcggcagt	attctcggct	gtatgttctc	tggcagagag	aggcagatga	acatagtttt	1680
agggagaaa	ctgatgggaa	acctgtgagt	taagccacat	gtctcaccag	gaataattta	1740
tgccaggaaa	ccaggaagtc	attcaagttg	ttctctgagg	ccaaagacac	tgagcacagc	1800
ccagagccaa	taaaagatct	ttgagtctct	ggtgaattca	cgaagtgacc	ccagctttag	1860
ctactgcaat	tatgattttt	atgggacagc	aatttcttgc	atctctacag	aggaagaaga	1920
gggggagtgg	gaggggaagg	aaagagaaca	gagcggcact	gggatttgaa	aggggaacct	1980
ctctatctga	ggagcccca	ctggcttcag	aagcaactta	ccaaggggta	tttaaagaca	2040
tgaaaatttc	cagaaatacc	atgttggtga	tccctttgtt	tctgtaatat	taaaactcag	2100
tgaaattata	ctctgacagt	ttctctcttt	ctgcctcttc	cctctgcaga	gtcaggacct	2160
gcagaaactg	ctgaaacaag	atctcatggt	gtcacccatg	agagatgact	caatgccaa	2220
gcctgaagtt	atagagtgtt	tacagcgggt	gcgatattca	ggggtcatcg	ccaactgggt	2280
tcgagttcca	aagctctgat	gaagaaacaa	gactccttga	tgtgttactg	atcccactga	2340
ttccaggagt	caagattagc	caggaagcca	aacaccagga	gttgggggtg	cacgtcacca	2400
gtccagagcc	ctgccacgga	tgtacgcagg	agcccagcat	taggcaatca	ggagccagaa	2460
catgatcacc	agggccacaa	ataggaagag	gcgtgacagg	aactgctcgt	ccacatacct	2520
gggggtgtcc						2529

&lt;210&gt; 49

&lt;211&gt; 1552

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 49

```

tttttttttt tttttgattt ctgggacaat taagctttat ttttcatata tatatatatt 60
ttcatatata tatatacata catatataaa ggaaacaatt tgcaaattta cacacctgac 120
aaaaccatat atacacacat atgtatgcat acacacagac agacacacac acccgaagct 180
ctagccaggc ccgttttcca tccctaagta ccattctctc atttgggccc ttctagggtt 240
ggggccctga gcttggtttg tagaagtttg gtgctaatat aaccatagct ttaatcccca 300
tgaaggacag tgtagacctc atctttgtct gctccccgct gcctttcagt tttacgtgat 360
ccatcaagag ggctatggga gccaaagtga cacgggggat tgaggctaatt tcacctgaac 420
tcgaaaacag cgcccagctt cctcacgcga ggcacgcgtc ttttcttttt ttttccctcga 480
gacggagtct cgctgtgttg cccaggettg agtgacgttg cacggtctcg gctcactgca 540
agctccacct cctggattca taccattctc ctgcttcagc cttccgagta gctgggacta 600
taggtgccaa ccactacgcc tagctaattt tttttgtat ttttagtaga gacagggttt 660
caccgtgtta gccaggatgg tctcgtcctg actttgtgat ccgcccgcct cggcctccca 720
aagtgtctgg attacaggcg tgagccacca cacctggccc cggcacgtat cttttaagga 780
atgacaccag ttctgtgctt ctgaccaaag aaaaaatgtc acaggagact ttgaagaggc 840
agacaggagg gtggtggcag caacactgca gctgcttctg gatgctgctg ggggtgctctc 900
cggagcgggt gtgaacagcg cacttcaaca tgagcaggcg cctggctccg gtgtgtcctc 960
acttcagtgg tgcacctgga tgggtggaag cagcctttgg ggcaggaaac cagctcagag 1020
aggctacca gctcagctgc tggcaggagc caggatttta cagccataat gtgtgttaaag 1080
aaaaaacacg ttctgcaaga aactctccta cccgctcggg agactggggc tccttgcttg 1140
ggatgagctt cactcaacgt ggagatggtg gtggactggt ccctgaaaag cgggccttgc 1200
agggccaagt gaggtcctca ggtcctaacc cagtggccct ctgaaagggg gtgtgcaggc 1260
gaggggagca ggaggcttct ctctagtccc tttggaggct ttggctgaga gaagagttag 1320
cagggagctg ggaatggtcg aggcagggaa gggagctgaa gtgattcggg gctaattgct 1380
cagatcgatg tattctctc cctggtctcc cggagccctc ttgtcacgcg tgctgcctgt 1440
caggaggccc atctcttctg ggagcttacc tgacttaact tcaactacaa gttcgtctct 1500
acgagaccgg gggtagcgtg atctcctgct tccctgagcg cctgcacggc ag 1552

```

&lt;210&gt; 50

&lt;211&gt; 921

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 50

```

ctgtggtccc agctactcag gaggetgagg cgggaggatt gcttgagccc aggagttgga 60
tgttgcagtg agccaagatc gcaccattgc cctccactct gggccacgga gcaataccct 120
gtctcagaaa acaacaaca aaaagcagaa acgctgaagg ggtcggttta cgggaaaacc 180
gcctgtcaga acacttggtt actcctaccc cagatcagtg gacctgggaa tgagggttgg 240
tcccgggagg cttttctcca agctgttgcc accagaccgg ccatgggaac cctggccaca 300
gaagcctccc ggggagttag ccagagcctg gaccgctgtg ctgatgtgtc tggggtggag 360
ggaggggtgg gagtgtgcaa ggggtgtgtg gtgcccgggg ggtgttcatt ggcaagcatg 420
tgcgtgcctg tgtgtgtgct tgcccctccc ctgcagccgt cgggtgtatc tccctccagc 480
cccttcgcca ccttctgagc attgtctgtc cagctgagac tgcccagaga cagcagagct 540
ccacgtggtt ttaaggggag acctttccct ggacctgggg gtctcgccgt atctcatgac 600
cagggtgtaa atgaccgac atgcatcacc tgcttttcga tgaccaacct ccctgtcccc 660
gtcccgtga cctgcccccg tggcgtctca cggtgatgcc tgctcctgac attggtgttc 720
actgtagcaa actacattct ggatgggaat tttcatgtac atgtgtggca tgtggaaaat 780
ttcaataaaa atggacttga tttagaaagc caaaaagctg tgtggtcctt ccagcacgga 840
tactttgacc tcttgccctac aacccttcc ttgggtccga ggctggtagc tttgttcact 900
tcagatggtt gggggcgggt g

```

&lt;210&gt; 51

&lt;211&gt; 338

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

<400> 51  
 atgatctatc tagatgcctt accgtaaaat caaaacacaa aaccctactg actcattccc 60  
 tcccttcag atattacccc atttctctac ttcccattgt agccaaactt tccaaaaatt 120  
 catgttctgt cttcatttcc tcatgttcaa cccaccctgt cttagctacc acccctcagt 180  
 aacgacctag cctgggtaga aacaaatgtc agcatgatac cataactcaat gatccttcgt 240  
 cactgttgctc attgtcatca ttccatggcc ttactttccc tctcagcgcc atttgctaca 300  
 gtaagaaact ttctttcttg aattcttggg tctcttgg 338

<210> 52  
 <211> 1191  
 <212> DNA  
 <213> Homo sapiens

<400> 52  
 ctagcaagca ggtaaagcag ctttgtacaa acacacacag accaacacat ccgggggatgg 60  
 ctgtgtgttg ctagagcaga ggctgattaa acactcagtg tggtggctct ctgtgccact 120  
 cctggaaaat aatgaattgg gtaaggaaca gtttaataaga aaatgtgcct tgctaactgt 180  
 gcacattaca acaaagagct ggcagctcct gaaggaaaag ggcttgtgcc gctgccgttc 240  
 aaacttgtca gtcaactcat gccagcagcc tcagcgtctg cctccccagc acaccctcat 300  
 tacatgtgtc tgtctggcct gatctgtgca tctgctcgga gacgctcctg acaagtcggg 360  
 aatttctcta tttctccact ggtgcaaaga gcggatttct ccctgcttct cttctgtcac 420  
 ccccgctcct cccccagg aggtccttg atttatggta gctttggact tgcttccccg 480  
 tctgactgtc cttgacttct agaatggaag aagctgagct ggtgaaggga agactccagg 540  
 ccatcacaga taaaagaaaa atacaggaag aaatctcaca gaagcgtctg aaaatagagg 600  
 aagacaaact aaagcaccag catttgaaga aaaaggcctt gagggagaaa tggcttctag 660  
 atggaatcag cagcggaaaa gaacaggaag agatgaagaa gcaaaatcaa caagaccagc 720  
 accagatcca ggttctagaa caaagtatcc tcaggcttga gaaagagatc caagatcttg 780  
 aaaaagctga actgcaaact tcaacgaagg aagaggccat tttaaagaaa ctaaagtcaa 840  
 ttgagcggac aacagaagac attataagat ctgtgaaagt ggaaagagaa gaaagagcag 900  
 aagagtcaat tgaggacatc tatgctaata tccttgacct tccaaagtcc tacatacctt 960  
 ctaggttaag gaaggagata aatgaagaaa aagaagatga tgaacaaaat aggaaagctt 1020  
 tatatgccat ggaaattaaa gttgaaaaag acttgaagac tggagaaagt acagtctctg 1080  
 cttccaatac ctctggccat cagatgacct taaaagggtac aggagtataa gtttaagatg 1140  
 atgggcaaaa gtccagtgtat ttcagtaaaag tgctaatac aagttggagg t 1191

<210> 53  
 <211> 1200  
 <212> DNA  
 <213> Homo sapiens

<400> 53  
 aacagggact ctactctat caaccccagg ctggagtcgg gtgcgccac cctggctccc 60  
 tgcaacctcc gcctcccagg ctcaagcaac tctcctgcct cagtcgctct agtagctggg 120  
 actacaggca cacaccacca tgcccagcca atttttgcat tttttgtaga gacagggttt 180  
 cgcttctgt ccaggccggc atcatatact ttaaatcatg ccagatgac tttaatacct 240  
 aatacaatat atcaggttgg tttaaaaata attgcttttt tattattttt gcattttttg 300  
 accaacctta atgctatgta aatagttgtt atactgttgc ttaacaacag tatgacaatt 360  
 ttggcttttt ctttgtatta ttttgtattt ttttttttta ttgtgtgggc tttttttttt 420  
 ttctcagtg tttcaattcc tcttgggtg aatccatgga tgcaaaaccc acagatatga 480  
 agggctggct atatatgcat tgatgattgt cctattatat tagttataaa gtgtcattta 540  
 atatgtagtg aaagtattgg tacagtggaa agagttagtg aaaacataaa catttggacc 600  
 tttcaagaaa ggtagcttgg tgaagttttt caccttcaaa ctatgtccca gtcagggtct 660  
 tgctactaat tagctataat ctttgcacaa attacatcac ctttgagtct cagttgcctc 720  
 acctgtaaaa tgaaagaact ggatactctc taaggctcact tccagccctg tcattctata 780  
 actctgttat gctgaggaag aaattcacat tgtgttaact gtatgagtca aactgaaaat 840  
 gattattaaa gtgggaaaaa gccaatgtct tctcttagaa agctcaacta aatttgagaa 900  
 gaataatctt ttcaattttt taagaattta aatattttta aggggttgac ctattttatt 960

agagatgggg tctcactctg tcacccagac tggagtacag tggcacaatc atagctcact 1020  
 gctgcctcaa attcatgggc tcaagtgate ctcttgctc tgcctccaga gtagctgcga 1080  
 ctatgggcat gtgccaccac gcctggctaa catttgattt gacctattta tttattgtga 1140  
 tttatatctt tttttttttt tctttttttt ttttttacia aatcagaaat acttattttg 1200

<210> 54

<211> 989

<212> DNA

<213> Homo sapiens

<400> 54

aagccaccac tcaaaacttc ctatacattt tcacagcaga gacaagtgaa catttatttt 60  
 tatgcctttc ttcctatgtg tatttcaagt ctttttcaaa acaaggcccc aggactctcc 120  
 gattcaatta gtccctgggc tggctgactg tgcaggagtc cagggagcct ctacaaatgc 180  
 agagtgactc tttaccaaca taaacctag atacatgcaa aaagcaggac ctttctcca 240  
 ggaatgtgcc atttcagatg cacagcacc cagcagaaaa gctggaattt tccctggaac 300  
 cgactgtgat agaggtgctt acatgaacat tgctactgtc tttctttttt tttgagacag 360  
 gtttcgcttg tgcacaggct gagtgcaatg cgtgatctca ctactgcaa tccacactcc 420  
 aggttcaagc attctcctgc tcagcctcct agtagctggg ttacaggcac tgccaccatg 480  
 ccggctaatt ttgtattttt gtagagatgg atttctccat ttggtcaggc ggtctcgaac 540  
 cccaacctca gtgatctgcc acctcagcct cctaagtgtt ggattacagg atgagccacc 600  
 cgaccggcca ctactgtctt tctttgacct ttccagtttc gaagataaag aggaaataat 660  
 ttctctgaag tacttgataa aattttccaa caaaacacat gtccacttca ctgataaaaa 720  
 atttaccgca gtttggcacc taagagtatg acaacagcaa taaaaagtaa tttcaaagag 780  
 ttaagatttc ttcagcaaaa tagatgattc acatcttcaa gtcctttttg aaatcagtta 840  
 ttaattattat tctttcctca tttccatctg aatgactgca gcaatagttt tttttttttt 900  
 tttttttttt ttgagagatg gaatctcgt ctgtcgccca gcgggagtg cactggcgcaa 960  
 gcccggtc caagcaatctc tgccaccgg 989

<210> 55

<211> 250

<212> DNA

<213> Homo sapiens

<400> 55

catttcccca ttggtcctga tgttgaagat ttagttaaag aggctgtaag tcaggttcga 60  
 gcagaggcta ctacaagaag taggggaatca agtccctcac atgggctatt aaaactaggt 120  
 agtgggtggag tagtgaaaaa gaaatctgag caacttcata acgtaactgc ctttcagggg 180  
 aaagggcatt ctttaggaac tgcactcgtt aaccacacac ttgatccaag agctagggaa 240  
 acttcagtgt 250

<210> 56

<211> 2270

<212> DNA

<213> Homo sapiens

<400> 56

gcgccccga gcagcgcccg cgccctcccg gccttctccg ccgggacctc gagcgaaaga 60  
 ggccccgcgc ccgcccagcc ctgcgctccc tgcccaccgg gcacaccgg ccgccacccc 120  
 gaccccgctg cgcacggcct gtccgctgca caccagcttg ttggcgtctt cgtcgccgg 180  
 ctgcgcccg gctactcctg cgcgccacaa tgagctcccg catcgccagg gcgctcgct 240  
 tagtcgtcac ccttctccac ttgaccaggc tggcgctctc cacctgcccc gctgcctgcc 300  
 actgccccct ggaggcgccc aagtgcgcgc cgggagtcgg gctggtccgg gacggctgcg 360  
 gctgctgtaa ggtctgcgcc aagcagctca acgaggactg cagcaaaaac cagccctgcg 420  
 accacaccaa ggggctggaa tgcaacttcg gcgccaagtc caccgctctg aaggggatct 480  
 gcagagctca gtcagagggc agaccctgtg aatataactc cagaatctac caaaacgggg 540  
 aaagtttcca gcccaactgt aaacatcagt gcacatgtat tgatggcgcc gtgggctgca 600  
 ttctctgtgt tccccaagaa ctatctctcc ccaacttggg ctgtcccaac cctcggctgg 660

tcaaagttac	cgggcagtg	tgcgaggagt	gggtctgtga	cgaggatagt	atcaaggacc	720
ccatggagga	ccaggacggc	ctccttggca	aggagctggg	attcgatgcc	tccgaggtgg	780
agttgacgag	aaacaatgaa	ttgattgcag	ttggaaaagg	cagctcactg	aagcggctcc	840
ctgttttttg	aatggagcct	cgcacccat	acaacccttt	acaaggccag	aaatgtattg	900
ttcaaacaac	ttcatggtcc	cagtgtctca	agacctgtgg	aactggtatc	tccacacgag	960
ttaccaatga	caaccctgag	tgcgcgcttg	tgaaagaaac	ccggattttg	gaggtgcggc	1020
cttgtggaca	gccagtgtag	agcagcctga	aaaagggcaa	gaaatgcagc	aagaccaaga	1080
aatccccga	accagtcagg	tttacttacg	ctggatgttt	gagtgtgaag	aaataccggc	1140
ccaagtactg	cggttcctgc	gtggacggcc	gatgctgcac	gccccagctg	accaggactg	1200
tgaagatgag	gttccgctgc	gaagatgggg	agacattttc	caagaacgtc	atgatgatcc	1260
agtcctgcaa	atgcaactac	aactgcccgc	atgccaatga	agcagcgttt	cccttctaca	1320
ggctgttcaa	tgacattcac	aaatttaggg	actaaatgct	acctgggttt	ccagggcaca	1380
cctagacaaa	caagggagaa	gagtgtcaga	atcagaatca	tggagaaaat	gggagggggt	1440
gggtgtgggtg	atgggactca	ttgtagaaag	gaagccttgc	tcattcttga	ggagcattaa	1500
gggtatttcga	aactgccaag	gggtgtgggtg	cggatggaca	ctaattgcagc	cacgatttga	1560
gaataactttg	cttcatagta	ttggagcaca	tgttactgct	tcatttttga	gcttgtggag	1620
ttgatgactt	tctgttttct	gtttgtaaat	tatttgctaa	gcataatttc	tctaggcttt	1680
tttctctttg	gggttctaca	gtcgtaaaag	agataataag	attagtggga	cagtttaaaag	1740
cttttattcg	tcctttgaca	aaagtaaatg	ggagggcatt	ccatcccttc	ctgaaggggg	1800
acactccatg	agtgtctgtg	agaggcagct	atctgcactc	taaactgcaa	acagaaatca	1860
gggtgttttaa	gactgaatgt	tttattttatc	aaaatgtagc	ttttggggag	ggaggggaaa	1920
tgtaatactg	gaataatttg	taaatgattt	taattttata	ttcagtgaag	agattttatt	1980
tatggaatta	accattttaat	aaagaaatat	ttacctaata	tctgagtgtg	tgccattcgg	2040
tattttttaga	gggtgtccaa	agtcattagg	aacaacctag	ctcacgtact	caattattca	2100
aacaggactt	attgggatac	agcagtgaat	taagctatta	aaataagata	atgattgctt	2160
ttataccttc	agtagagaaa	agtctttgca	tataaagtaa	tgtttaaaaa	acatgtattg	2220
aacacgacat	tgtatgaagc	acaataaaga	ttctgaagct	aaaaaaaaaa		2270

&lt;210&gt; 57

&lt;211&gt; 1636

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 57

cttgaatgaa	gctgacacca	agaaccgcgg	gaagagcttg	ggcccaaagc	aggaaaggga	60
agcgctcgag	ttggaaagga	accgctgctg	ctggccgaac	tcaagcccg	gcgccccac	120
cagtttgatt	ggaagtccag	ctgtgaaacc	tggagcgtcg	ccttctcccc	agatggctcc	180
tggtttgctt	gggtctcaag	acactgcac	gtcaaaactga	tccccggcc	gttggaggag	240
cagtttcatt	ctaaagggtt	tgaagccaaa	agccgaagta	gcaaaaatga	gacgaaagg	300
cggggcagcc	caaaagagaa	gacgctggac	tgtgtgcaga	ttgtctgggg	gctggccttc	360
agcccgtggc	cttccccacc	cagcaggaag	ctctgggcac	gccaccacc	ccaagtgc	420
gatgtctctt	gcctggttct	tgctacggga	ctcaacgatg	ggcagatcaa	gatctgggag	480
gtgcagacag	ggctcctgct	tttgaatctt	tccggccacc	aagatgtcgt	gagagatctg	540
agcttcacac	ccagtggcag	tttgattttg	gtctcccgct	cacgggataa	gactcttcgc	600
atctgggacc	tgaataaaca	cggtaaacag	attcaagtgt	tatcgggcca	cctgcagtgg	660
gtttactgct	gttccatctc	cccagactgc	agcatgctgt	gctctgcagc	tggagagaa	720
tcggctcttc	tatggagcat	gaggtcctac	acgttaattc	ggaagctaga	gggccatcaa	780
agcagtgttg	tctcttctga	cttctcccc	gactctgccc	tgtctgtcac	ggcttcttac	840
gataccaatg	tgattatgtg	ggacccctac	accggcgaaa	ggctgaggtc	actccaccac	900
accaggttg	accccgccat	ggatgacagt	gacgtccaca	ttagctcact	gagatctgtg	960
tgttctctc	cagaaggctt	gtaccttgcc	acggtggcag	atgacagact	cctcaggatc	1020
tgggcccctg	aactgaaaac	tcccattgca	tttgctccta	tgaccaatgg	gctttgctgc	1080
acattttttc	cacatgggtg	agtcattgcc	acagggacaa	gagatggcca	cgtccagttc	1140
tggacagctc	ctagggtcct	gtcctcactg	aagcacttat	gccggaaaag	ccttcgaagt	1200
ttcctaacaa	cttaccaagt	cctagcactg	ccaatcccca	agaaaatgaa	agagttcctc	1260
acatacagga	cttttttaag	aacaccacat	cttgtgcttc	ttttagcag	ggtaaatcgt	1320
cctgtcaaa	ggagttgctg	gaataatggg	ccaaacatct	ggtcttgcac	tgaatatgca	1380
tttctttggg	attgtgaata	gaatgtagca	aaaccagatt	ccagtgtaca	taaaagaatt	1440

```

tttttgtcctt taaatagata caaatgtcta tcaactttaa tcaagttgta acttatattg 1500
aagacaatttt gatacataat aaaaaattat gacaatgtcc tgggaaaaaa aaaatgtaga 1560
aagatggtga aggggtggat ggatgaggag cgtggtgacg ggggcctgca gcgggttggg 1620
gaccctgtgc tgcgtt                                     1636

```

<210> 58

<211> 460

<212> DNA

<213> Homo sapiens

<400> 58

```

ccatgtgtgt atgagagaga gagagattgg gagggagagg gagctcacta gcgcatatgt 60
gcctccaggg ggctgcagat gtgtctgagg gtgagcctgg tgaaagagaa gacaaaagaa 120
tggaatgagc taaagcagcc gcctgggggtg ggaggccgag cccatttgta tgcagcaggg 180
ggcaggagcc cagcaaggga gcctccattc ccaggactct ggaggagct gagaccatcc 240
atgcccgcag agccctccct cacactccat cctgtccagc cctaattgtg caggtgggga 300
aactgaggct gggaagtcac atagcaagtg actggcagag ctgggactgg aaccaacca 360
gcctcctaga ccacggttct tcccatcaat ggaatgctag agactccagc caggtgggta 420
ccgagctcga attcgtaatc atgggtcatag ctgtttcctg 460

```

<210> 59

<211> 1049

<212> DNA

<213> Homo sapiens

<400> 59

```

atctgatcaa gaatacctgc cctggtcact ctgcggatgt ttctgtccac ttgttcacat 60
tgaggaccaa gatatacctt ttacagagg cacttggtcg gtctaacaca gacacctcca 120
tgacgacatg ctggctcaca ttttgcagtt ctgcagaagt cccctccca gcctggacta 180
cagcagcact ttcccgtggg ggtgcagtag ccgtttogac agagcctgga gcactctgaa 240
gtcagtgctc gtgcagggtg taccgtggct ctgcattcct caggcattaa aggtcctttg 300
ggatctacaa tttttagtag ttttccattg tgagtctggg tcatactttt actgcttgat 360
aaaatgtaaa cttcacctag ttcattctct ccaaatocca agatgtgacc ggaaaagtag 420
cctctacagg acccactagt gccgacacag agtgggtttt cttgccactg ctttgcaca 480
ggactttgct ggagagttag gaaattccca ttacgatctc caaacacgta gcttccatac 540
aatctttctg actggcagcc ccggtataca aatccacca ccaaaggacc attactgaat 600
ggcttgaatt ctaaaagtga tgggtcactt tcataatctt tcccccttat tatctgtaga 660
attctggctg atgatctgtt ttttccattg gagtctgaac acagtatcgt taaattgatg 720
tttatatcag tgggatgtct atccacagca catctgcctg gatcgtggag cccatgagca 780
aacacttcgg ggggctggtt ggtgctgttg aagtgtgggt tgctccttgg tatggaataa 840
ggcacgttgc acatgtctgt gtccacatcc agccgtagca ctgagcctgt gaaatcactt 900
aaccatcca tttcttccat atcatccagt gtaatcatcc catcaccaag aatgatgtac 960
aaaaaccctg cagggccaaa gagcagttgc cctcccagat gctttctgtg gagttctgca 1020
acttcaagaa agactctggc tgttctcaa 1049

```

<210> 60

<211> 747

<212> DNA

<213> Homo sapiens

<400> 60

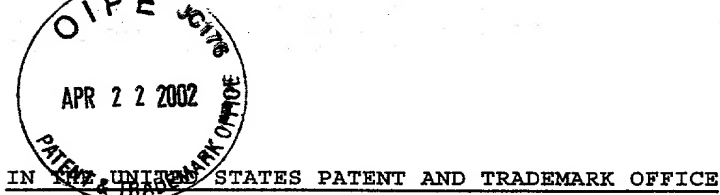
```

tttttcaa at cacaatggc ttctttgacc ccatcaaata actttattca cacaaacgtc 60
ccttaattta caaagcctca gtcattcata cacattaggg gatccacagt gttcaaggaa 120
cttaaatata atgtatcata ccaacccaag taaaccaagt acaaaaaata ttcataataa 180
gttggttaca cgtaggctct agattaccag cttctgtgca aaaaaaggaa atgaagaaaa 240
atagatttat taactagtat tggaaactaa ctttgtgcct ggcttaaaac ctccctcacg 300
ctcgtctgtc ccacacaaat gtttaagaag tcactgcaat gtactcccc gctctgatga 360
aaagaagccc ctggcacaaa agattccagt gccctgaag aggtctccct cctcctgtgg 420

```



[illegible]



Atty. Docket No: SCH 1821

In re patent application of

THIERAUCH, KARL-HEINZ et al.

Serial No. 09/936,133

Filed: September 7, 2001

For: HUMAN NUCLEIC ACID SEQUENCES AND PROTEIN SEQUENCES  
FROM ENDOTHELIAL CELLS

STATEMENT TO SUPPORT FILING AND SUBMISSION IN  
ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Assistant Commissioner for Patents  
Washington, D.C. 20231  
Box SEQUENCE

Sir:

In connection with a Sequence Listing submitted concurrently herewith, the undersigned hereby states that:

1. the submission, filed herewith in accordance with 37 C.F.R. § 1.821(g), does not include new matter;

2. the content of the attached paper copy and the attached computer readable copy of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same; and

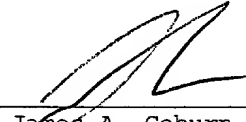
3. all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United

Serial No. 09/936,133

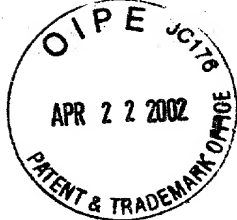
States Code and that such willful false statements may jeopardize the validity of the application or any patent resulting therefrom.

Respectfully submitted,

April 19, 2002  
Date

  
James A. Coburn

HARBOR CONSULTING  
Intellectual Property Services  
1500A Lafayette Road  
Suite 262  
Portsmouth, N.H.  
800-318-3021



## SEQUENCE LISTING

<110> THIERAUCH, KARL-HEINZ  
GLIENKE, JENS  
HINZMANN, BERND  
PILARSKY, CHRISTIAN

<120> HUMAN NUCLEIC ACID SEQUENCES AND PROTEIN SEQUENCES  
FROM ENDOTHELIAL CELLS

<130> SCH 1821

<140> 09/936,133

<141> 2001-09-07

<150> DE 199 11 684.9

<151> 1999-03-09

<150> DE 199 48 679.4

<151> 1999-10-01

<150> PCT/EP00/02005

<151> 2000-03-08

<160> 60

<210> 1

<211> 1835

<212> DNA

<213> Homo sapiens

<400> 1

ttttacagtt	ttccttttct	tcagagttta	ttttgaattt	tcattttttg	ataaccaagc	60
agctctttta	gaagaatgca	cagaagagtc	attctggcac	ttttggatag	tacataagat	120
tttctttttt	tttttttaat	tttttttaat	agtcacattc	agctcgcttg	ctcaaaccag	180
actccacat	tgggtgagca	agatgagccc	ataggattcc	agagttaata	cgtaaccgta	240
tatacaaaaca	gccaaaaaac	cataatggtg	ccacagggat	ggagcaggga	agggcatctc	300
taacgtgtcc	tctagtctat	cttcgctaaa	cagaacccac	gttacacatg	ataactagag	360
agcacactgt	gttgaaacga	ggatgctgac	cccaaattgg	acttggcagc	atgcagttta	420
aagcaaaaaga	gacatccttt	aataactgta	taaaatccag	gcagttccat	taaaggggtt	480
aagaaaaacca	acaacaacaa	aaagcgaggg	actgtctgtt	gtcactgtca	aaaaggcact	540
tggagttaat	gggaccagga	ttggaggact	cttagctgat	acagatttca	gtacgatttc	600
attaaaaaggc	ttggatgtta	agagaggaca	ctcagcgggt	cctgaaggga	gacgctgaga	660
tggaccgctg	agaagcggaa	cagatgaaca	caaagggaatc	aaatctttac	aaccaaattg	720
cattttaagcg	acaacaaaaa	aaggcaaaacc	ccaaaacgca	acctaaccac	agcaaaatct	780
aagcaaaaatc	agacaacgaa	gcagcgatgc	atagctttcc	tttgagagaa	cgcatacctt	840
gagacgctac	gtgccaaacct	aagtctctcaa	cgacagcttc	acagtaggat	tattgtgata	900
aaaatgactc	aagcgatgca	aaaagtttca	tctgttccca	gaatccgagg	gagaactgag	960
gtgatcgta	gagcatagcg	acatcacgtg	cggtttctta	atgtccctgg	tggcggatac	1020
gccgagtcct	cggaggagca	tctggacacc	actttcagcc	acctccttgc	agggggcgaca	1080
tccgccaaag	tcataccttta	ttccgagtaa	taactttaat	tcctttctaa	catttacacg	1140
gcaaacagga	atgcagtaaa	cgtccacgtc	cgtcccacgg	ctgggctgcc	gttcctgttc	1200
ctccacgaac	gggtacgcgc	ttccatgaga	aaggatatatt	ggcaatttta	tattccacag	1260
tcagggtgggt	ctgcgatagc	tcattttaatg	ttaaaccgca	tcaggggcct	ctcctcccgt	1320
ttctgccagg	ggcttttctt	gtctttctct	tggcgagctc	gtgggcagat	cttctctggt	1380
gggggctggc	tgtctggctcc	gagggggcat	ccgcagtcgc	tctggctcgtc	tcctcctgca	1440
ggctgggcag	ctggccacca	cttctccgac	tcgacccctc	caacaagcat	cgcagggcac	1500
tgtcctcggg	ggtacagacc	gtgggtccac	attcgctacc	actctgttcc	acgtcatcca	1560

```

ggtagacacgag ctgcgtgtag gccgtgctgt ctggggctcg aggcctcttc tgctgggtgct 1620
cttggacggg cgggtagttc tgctgcagag acaaaagcacc tccccctccc ttccgggctg 1680
atcttggttc attcatatct acgccagagt ccaaactggc atcattactt ccgttccttc 1740
cagctccttg gagaatcaat gtatgaatgt ctaacctgac cggtggacct gccatccaag 1800
gagacgaacc acgcccgggg gtgcggaagc ggcct 1835

```

```

<210> 2
<211> 581
<212> DNA
<213> Homo sapiens

```

```

<400> 2
gttctagatt gttttattca gtaattagct cttaaagacc ctggggcctg tgctaccag 60
acactaacia cagtctctat ccagttgctg gttctgggtg acgtgatctc cccatcatga 120
tcaacttact tctgtggcc cattagggaa gtggtgacct cgggagctat ttgcctgttg 180
agtgcacaca cctggaaaca tactgctctc atttttcat ccacatcagt gagaaatgag 240
tgccccgtta gcaagatata actatgcaat catgcaacaa agctgcctaa taacatttca 300
tttattacag gactaaaagt tcattattgt ttgtaaagga tgaattcata acctctgcag 360
agttatagtt catacacagt tgatttccat ttataaaggc agaaagtccct tgttttctct 420
aaatgtcaag ctttgactga aaactcccg ttttccagtc actggagtgt gtgcgtatga 480
aagaaaatct ttagcaatta gatgggagag aagggaaata gtacttgaaa tgtaggccct 540
cacctcccca tgacatctc catgagcctc ctgatgtagt g 581

```

```

<210> 3
<211> 516
<212> DNA
<213> Homo sapiens

```

```

<400> 3
tagagatggt ggttgatgac ccccgggatc tggagcagat gaatgaagag tctctggaag 60
tcagcccaga catgtgcatc tacatcacag aggacatgct catgtcgcg aacctgaatg 120
gacactctgg gttgattgtg aaagaaattg ggtctccac ctcgagctct tcagaaacag 180
ttgttaagct tcgtggccag agtactgatt ctctccaca gactatatgt cggaaaccaa 240
agacctccac tgatcgacac agcttgagcc tcgatgacat cagactttac cagaaagact 300
tctcgcgcat tgcaggtctg tctcaggaca ctgctcagag ttacaccttt ggatgtggcc 360
atgaactgga tgaggaaggc ctctattgca acagttgctt ggcccagcag tgcacaca 420
tccaagatgc ttttccagtc aaaagaacca gcaataactt ttctctggat ctcaactcat 480
atgaagtcc agagtttggt gtgtaaagtc cgtctg 516

```

```

<210> 4
<211> 1099
<212> DNA
<213> Homo sapiens

```

```

<400> 4
cccacaacac agggggcctg aaacacgcca gcctctctc tgtggtcagc ttggccagc 60
cctgctcact ggatcacagc ccattgtagg tggggcatgg tggggatcag ggcccctggc 120
ccacggggag gtagaagaag acctgggtccg tgtaagggtc tgagaagggt ccctgggtcg 180
ggggtgcgtc ttggccttgc cgtgccctca tccccggct gaggcagcga cacagcaggt 240
gcaccaactc cagcaggtta agcaccaggg agatgagtc aaccaccaac atgaagatga 300
tgaagatggt cttctccgtg gggcgagaga caaagcagtc cacgaggtag gggcaggggt 360
ctcgctggca caaaaacacg ggctccatgg tccagccgta caggcgccac tggccataga 420
ggaagcctgc ctctagcaca ctcttgaga gcacactggc gacatagggt cccatcagtg 480
ctccgcggat gcgcaggcga ccatcttctg ccaccgagat cttggccatc tgacgctcta 540
cggccgccag cggccgctcc acctgtgggt ccttggccgg cagtggccgc agctccccct 600
ccttctgccg cagccgctct tctcgccgag acaggtaaat gacatggccc aggtagacca 660
gggtgggtgt gctgacgaag aggaactgca gcaccagta gcggatgtgg gagatgggga 720

```

```
<210> 5
<211> 1015
<212> DNA
<213> Homo sapiens
```

```
<210> 6
<211> 2313
<212> DNA
<213> Homo sapiens
```

<400> 6							
ccagagcagg	cctgggtggtg	agcaggggacg	gtgcaccgga	cggcggggatc	gagcaaattgg	60	
gtctggccat	ggagcacgga	gggtcctacg	ctcggggcggg	gggcagctct	cgggggtgct	120	
ggtattacct	gcgctacttc	ttcctcttcg	tctccctcat	ccaattccctc	atcatcctgg	180	
ggctcgtgct	cttcatggtc	tatggcaacg	tgcacgtgag	cacagagtcc	aacctgcagg	240	
ccaccgagcg	ccgagccgag	ggcctataca	gtcagctcct	agggctcacg	gcctcccagt	300	
ccaacttgac	caaggagctc	aacttcacca	cccgcgcaa	ggatgccatc	atgcagatgt	360	
ggctgaatgc	tgcgcgcgac	ctggaccgca	tcaatgccag	cttcgccag	tgccaggtg	420	
accgggtcat	ctacacgaac	aatcagaggt	acatggctgc	catcatcttg	agtgagaagc	480	
aatgcagaga	tcaattcaag	gacatgaaca	agagctgcga	tgccttgctc	ttcatgctga	540	
atcagaaggt	gaagacgctg	gaggtggaga	tagccaagga	gaagaccatt	tgcactaagg	600	
ataaggaaag	cgtgtcgtg	aacaaacgcg	tggcgaggga	acagctggtt	gaatgcgtga	660	
aaaccgggga	ctgtcgcac	caagagcgcc	atcggccaag	gagcaactgc	aaaaggtgca	720	
agccctctgc	ctgcccttg	acaaggacaa	gtttgagatg	gaccttcgta	acctgtggag	780	
ggactcaatt	atcccacgca	gcctggacaa	cctgggttac	aacctctacc	atccctggg	840	
ctcgggaattg	gcctccatcc	gcagagcctg	cgaccacatg	cccagcctca	tgagctccaa	900	
ggtgaggagg	ctggcccggga	gcctccgggc	ggatatcgaa	cgcgtggccc	gcgagaactc	960	
agacctccaa	cggcagaagc	tggaaagcca	gcagggcctg	cggggcagtc	aggaggcgaa	1020	
acagaaggtg	gagaaggagg	ctcaggcccg	ggaggccaag	ctccaagctg	aatgtcccc	1080	
gcagacccag	ctagcgcctg	aggagaaggc	gggtgctcgg	aaggaaacga	acaacctggc	1140	

```

caaggagctg gaagagaaga agagggagggc ggagcagctc aggatggagc tggccatcag 1200
aaactcagcc ctggacacct gcatcaagac caagtcgcag ccgatgatgc cagtgtcaag 1260
gcccattgggc cctgtcccca acccccagcc catcgaccca gctagcctgg aggagttcaa 1320
gaggaagatc ctggagtccc agaggccccc tgcaggcatc cctgtagccc catccagtgg 1380
ctgaggagggc tccaggcctg aggaccaagg gatggcccgga ctcggcgggtt tgcggaggat 1440
gcaggggatat gctcacagcg cccgacacaa cccctccccg ccgcccccaa ccaccagggg 1500
ccaccatcag acaactccct gcatgcaaac ccctagtacc ctctcacacc cgcaccgcg 1560
cctcacgatc cctcaccagc agcacacggc cgcggagatg acgtcacgca agcaacggcg 1620
ctgacgtcac atatcacctg ggtgatggcg tcacgtggcc atgtagacgt cacgaagaga 1680
tatagcgatg gcgtcgtgca gatgcagcac gtcgcacaca gacatgggga acttggcatg 1740
acgtcacacc gagatgcagc aacgacgtca cgggccatgt cgacgtcaca catattaatg 1800
tcacacagac ggcggcgatgg catcacacag acggtgatga tgtcacacac agacacagtg 1860
acaacacaca ccatgacaac gacacctata gatatggcac caacatcaca tgcacgcatg 1920
ccctttcaca cacactttct acccaattct cacctagtgt cacgttcccc cgaccctggc 1980
acacggggcca aggtacccac aggatcccat ccctccccgc acagccctgg gccccagcac 2040
ctccccctct ccagcttctt ggccctcccg ccacttcctc acccccagtg cctggaccgg 2100
gaggtgagaa caggaagcca ttcacctccg ctcccttgagc gtgagtgttt ccaggacccc 2160
ctcggggccc tgagccgggg gtgaggggtca cctgttgtcg ggaggggagc cactccttct 2220
cccccaactc ccagccctgc ctgtggcccc ttgaaatgtt ggtggcactt aataaatatt 2280
agtaaatcct taaaaaaaaa aaaaaaaaaa aaa 2313

```

<210> 7

<211> 389

<212> DNA

<213> Homo sapiens

<400> 7

```

gccaaaaaga tggcttcaaa agtaagaatg aaacatttga tccattcagc tttaggctat 60
gccactggat tcatgtctag aaaagatagg ataatttctg taaagaaatg aagaccttgc 120
tattctaaaa tcagatcctt acagatccag atttcaggaa acaaatacat aggggactaa 180
ctttccttgt tcagattagt ttttctcctt tgcacccagc tatataatat gaggaagtat 240
tgacttttta aaagtgtttt agttttccat ttctttgata tgaagaaata tatttcggga 300
gaaccctgag ctattaataa tctatgtggc tagtgcgtat atatttgtct gaatttgttc 360
tccttttgtg gtgtccagtg ggtaacatc 389

```

<210> 8

<211> 157

<212> DNA

<213> Homo sapiens

<400> 8

```

tgcttttaaac agctgtgtca aaaactgaca tcagagagta aattgaattt ggttttgtag 60
gaagcaggaa gcaagccac tcaaacgtga aatttggcat gagggatcca gtaactttct 120
cctcaatctg tgaactatat gtgagtttga tattttg 157

```

<210> 9

<211> 561

<212> DNA

<213> Homo sapiens

<400> 9

```

aatagtcaaa acataaacia aagctaatta actggcactg ttgtcacctg agactaagtg 60
gatgttgttg gctgacatac aggtcagcc agcagagaaa gaattctgaa ttccccctgc 120
tgaactgaac tattctgtta catatggttg acaaatctgt gtgttatttc ttttctac 180
accatattta aatttatgag tatcaaccga ggacatagtc aaaccttcga tgatgaacat 240
tcctgatttt ttgcctgatt aatctctgtt gagctctact tgtggtcatt caagatttta 300
tgatgttgaa aggaaaagtg aatatgacct ttaaaaattg tattttgggt gatgatagtc 360
tcaccactat aaaactgtca attattgcct aatgttaaag atatccatca ttgtgattaa 420

```

```

ttaaacctat aatgagtatt cttaatggag aattcttaat ggatggatta tccccctgatc 480
ttttcttttaa aattttctctg cacacacagg acttctcatt ttccaataaa tgggtgtact 540
ctgccccaat ttctagga a 561

```

```

<210> 10
<211> 1508
<212> DNA
<213> Homo sapiens

```

```

<400> 10
cacaaacacg agagactcca cggctctgctt gagcaccgcc agcctcctag gctccagcac 60
tcgcaggtcc attctttctgc acgagcctct ctgtccagat ccataagcac ggtcagctca 120
gggtcgcgga gcagtagcag gacaagtacc agcagcagct cctctgaaca gagactgcta 180
ggatcatcct tctcctccgg gcctgttctt gatggcataa tccgggtgca acccaaatct 240
gagctcaagc caggtgagct taagccactg agcaaggaa atttgggcct gcacgcctac 300
aggtgtgagg actgtggcaa gtgcaaatgt aaggagtga cctaccaag gcctctgcca 360
tcagactgga tctgcgacaa gcagtgcctt tgctcggccc agaacgtgat tgactatggg 420
acttgtgtat gctgtgtgaa aggtctcttc tatcactgtt ctaatgatga tgaggacaac 480
tgtgtctgaca acccatgttc ttgcagccag tctcactgtt gtacacgatg gtcagccatg 540
gggtgtcatgt cctctttttt gccttgttta tgggtgtacc ttccagccaa ggggtgcctt 600
aaattgtgcc aggggtgtta tgaccgggtt aacaggcctg gttgccgctg taaaaactca 660
aacacagttt gctgcaaagt tcccactgtc cccctagga actttgaaaa accaaccatag 720
catcattaat caggaatatt acagtaatga ggattttttt tttctttttt taatacacat 780
atgcaaccaa ctaaacagtt ataactcttg cactgttaat agaaagtgg gatagtcttt 840
gctgtttgctg gtgaaatgct ttttgtccat gtgccgtttt aactgatatg cttgttagaa 900
ctcagcta at ggagctcaaa gtatgagata cagaacttgg tgacccatgt attgcataag 960
ctaaagcaac acagacactc ctaggcaaa tttttgtttg tgaatagtac ttgcaaaact 1020
tgtaaattag cagatgactt ttttccattg ttttctccag agagaatgtg ctatatTTTT 1080
gtatatacaa taatatttgc aactgtgaaa aacaagtgg gccatactac atggcacaga 1140
cacaaaatat tatactaata tgtgtacat tcggaagaat gtgaatcaat cagtatgttt 1200
ttagattgta ttttgcctta cagaaagcct ttattgtaag actctgattt ccctttggac 1260
ttcatgtata ttgtacagtt acagtaaaat tcaaccttta ttttctaatt ttttcaacat 1320
attgtttagt gtaaagaata tttatttgaa gttttattat tttataaaaa agaataattta 1380
ttttaagagg catcttaca attttgcccc ttttatgagg atgtgatagt tgctgcaaat 1440
gaggggttac agatgcatat gtccaatata aaatagaaaa tatattaacg tttgaaatta 1500
aaaaaaaa 1508

```

```

<210> 11
<211> 389
<212> DNA
<213> Homo sapiens

```

```

<400> 11
gggcaggtga tcagggcaca cttttccgtt ccattgagac agtagcattc cgggcaccca 60
tcgtgccagc tctctcattt tttatgatga tgaccatcca cgggtgagaca agtgcccgac 120
aggatgggtg gccagctga agcacaggcc gctctgcact tgcagataag acagccgtga 180
ctgtcctgct ggaaacccaa ggggcagatc ttactgcatg agagctctgg acattttctta 240
cagcgacaga tgtcacagcc gtgcttatcc ttcagcaatc caagtggaca atacttgtca 300
cagattatgg gtctgcactt cttgggcctt gggcggcact cacagatctc acagttttgg 360
acctcggccg cgaccacgct gggtagcga 389

```

```

<210> 12
<211> 981
<212> DNA
<213> Homo sapiens

```

```

<400> 12
tttttttttt ttggattgca aaaatttatt aaaattggag acactgtttt aatcttcttg 60

```



```

tgccatgaga ctccatcagg cagtctacaa agaccactgg gaggctgagg atcacttgag 120
cccagaagtt tgaggctgta gtaagcttca aaggccactg cactctagct tgggtgaggc 180
aagacccttt caagcagtaa gctgcatgct tgcttgttgt ggtcattaaa aaccctagtt 240
taggataaca acatattaat cagggcaaaa tacaaatgtg tgatgcttgt tagtagagta 300
acctcagaat caaaatggaa cggttttaca gtgatatcat tatatttcat ttggcagaat 360
cattacatca ttggttacac tgaaaatcat cacatgtacc aaaagctgac tcacctagtt 420
taggataaca ggtctgcctg tttgaagatg aaaaataata cccattttaa atttgcccta 480
ctcaattttc ttctcagtc ctttttaact tttaaacagc taatcactcc catctacaga 540
ttaagggtga tatgccacca aaaccttttg ccaccttaaa aatttccttc aaagttttaa 600
ctaattgcctg catttcttca atcatgaatt ctgagtcctt tgcttcttta aaacttgctc 660
cacacagtgt agtcaagccg actctccata cccaagcaag tcatccatgg ataaaaacgt 720
taccaggagc agaaccatta agctgggtcca ggcaagtgtg actccaccat ttcaacttcc 780
agctttctgt ctaattgcctg tgtgccaatg gcttgagtta ggcttgctct ttaggacttc 840
agtagctatt ctcatccttc cttggggaca caactgtcca taagggtgcta tccagagcca 900
cactgcatct gcaccagca ccatacctca caggagtcca ctcccacgag ccgcctgtat 960
ataagagttc ttttgatgac g
981

```

<210> 13

<211> 401

<212> DNA

<213> Homo sapiens

<400> 13

```

ataactacag cttcagcaga caactaaaga gactgcatta aggtgatttc tctggctata 60
aagagagccc ggccgcagag catgtgactg ctgggacctc tgggataggc aacactgcc 120
tctctcccc agagcgaccc cccgggcagg tcggggccca aggaatgacc cagcaactgc 180
tccctacca gcacactctc tttactgcca cctgcaatta tgctgtgaag atgactgggt 240
gtggtcatca cgattcagag aaatcaagat ctatgaccat tttaggcaaa gagagaaact 300
tggagaattg ctgaggacta ctgaaccttg ttttgctttt ttaaaaaata ctaaactctc 360
acttcagcat atttagttgt cattaaaatt aagctgatat t
401

```

<210> 14

<211> 1002

<212> DNA

<213> Homo sapiens

<400> 14

```

gacaatataa aaagtggaaa caagcataaa ttgcagacat aaaataatct tctggtagaa 60
acagttgtgg agaacaggtt gagtagagca acaacaacaa aagcttatgc agtcaccttc 120
tttgaaaatg ttaaatacaa gtccatttct ctttgtccag ctgggttttag cttagggtag 180
ccaattactt ctcttaaggt ccattggcatt cgccaggatt ctataaaagc caagttaact 240
gaagttaaata tctggggccc atcgacccc cactaagtac tttgtcacca tgttgtatct 300
taaaagtcac ttttactgtt ttgactcaga atttgggact tcagagtcaa acttcattgc 360
ttactccaaa cccagtttaa ttccccactt ttttaagtag gcttagcttt gagtgatttt 420
tggctataac cgaaatgtaa atccaccttc aaacaacaaa gtttgacaag actgaaatgt 480
tactgaaaac aatggtgcc a tatgctccaa agacatttcc ccaagataac tgccaaagag 540
tttttgagga ggacaatgat catttattat gtaggagcct tgatatctct gcaaaataga 600
attaatacag ctcaaagga gtagtaacca agcttttctg cccaggaagt acaaacatc 660
actacgaaca tgagagtaca agaggaaact ttcataatgc atttttcat tcatacatc 720
attcaataaa cattagccaa gctaattgtc caagccactg tgccaggat taacaatata 780
acaacaataa aagacacagt ccttcctctc aaggtgttca gtctagtagg gaagatgatt 840
attcattaaa atttttggtg catcagaatc atgaggagct tgtcaaaaat gtaaatcct 900
gcctatgttc tcagatattc tgggttaggtc aggagtggga acccaaaatc aattctttta 960
acaaacacta aaggtgattc taacacaggc ggtgtgagga cc
1002

```

<210> 15

<211> 280

<212> DNA  
<213> Homo sapiens

<400> 15

```
cgagggtgggc caccctgtgtc tgggtctgaga tttttaaatg aggattacat taccctatatt 60
ataatattcc tattctaatc tattgtattc ttacaattaa atgtatcaaa taattcttaa 120
aaacattatt agaaacaaac tgccataaac cttataagac taaaaaaatc accaagatga 180
aactgtatta tgactctcaa tatttaaaca ttttaaaaaa tggtagtggt tgtaagcac 240
caatcttaac tatttcacct gcccgggcgg ccgctcgagg 280
```

<210> 16

<211> 2041

<212> DNA

<213> Homo sapiens

<400> 16

```
ccccccgcag aactcccccc tggaaatagga tttttaaaac ccttgacaat tagaaatcct 60
atagagggtta gcattttttta ggtaaaaata tgggtgcccc tacagggatc atgcaacttc 120
cttaaaacca attcagcaca tatgtataaa gaaccctttt taaaaacatt tgtacttgaa 180
atacagacac agtgatgctg aagacactaa acaaaaactg aaaagtacta taccttgata 240
aattttgtta ttgccttctt tagagacttt ataactctta gttgattttc aaggacttga 300
atttaataat ggggtaatta cacaagacgt aaaggatttt ttaaaaaaca gtattttttt 360
ttacctctag catcaattct tttataaaga atgctaaata aattacattt tttgttcagt 420
aaaactgaag atagaccatt taaatgcttc taccaaattt aacgcagctt aattagggac 480
caggtagcata ttttcttctg aacatttttg gtcaagcatg tctaaccata aaagcaaatg 540
gaatttttaag aggtagattt tttttccatg atgcattttg ttaataaatg tgtcaagaaa 600
ataaaaacaa gcaactgagt tggtctcttg aagtataagg gtctaataaa aaataaaaga 660
tagatatttg ttatagtctg acatttttaac agtcatagta ttagacgttt cgtgaccagt 720
gcatttttga ctctctcagg atcaaaaatac gactctgcca actgtattaa atccctctcc 780
acccctcca ccagttggtc cacagcttcc tgggtgggtcg ttgtcatcaa atccattggg 840
ccgaaatgaa catgaagcag atgcagcttg gagggcccg gctcgagcat tcaactcttg 900
ttcctgtaaa tatagtttat tgtcttttgt tatagcatcc ataagttctt tctgtagagg 960
tgggtctcca tttatccaga gtccactggt tgggttatta ccacttaaac cattagtagt 1020
atgctgtttt ttatacaaaa gcacataagc tgtgtccttt ggaaacctgc tcgtaatttt 1080
ctggactgac tgaatgaag taaatgtcac tctactgtca ttaataaaa acccattctt 1140
ttgacatttc cttattttcc aaatcctggt caaaaactgc actgggacta tctctcccta 1200
gtaaatgact ctgggaggat gctaagcca gagcctcaga ctggtggtac atctgatatg 1260
aagagtctgt acttgtgata tttctggcat aagaatagta atgcccactt tcagaggata 1320
taccagagtg aaccacaacg gaacttaata gatagggcac caattttgtg caggaagctt 1380
catcagtcct tgaaggcttt aatttttttg caaggtctc actaagatca gtgaagtcaa 1440
catctacaga ccaactttct gacaatgaag agaaagaagt aattcttcta actggcaact 1500
ccaaaaccag tggccagtga tacattgtct aaaattttcc ttctcacatg atacttctga 1560
tcatatgaaa atctcaggag agtaagaata aggtattcag gttcctccgt gatttgcata 1620
gttttctcag cattttgcag agaggcacag ttttcacaat aatattgggt atcaccagta 1680
agaatctctg gagcccaaaa aataatttag taagtcagtt actgaagggt tgggttcacc 1740
tcccggtttc tgaggtagat ctttattaac aagaatcttg ttagattcgt tagggacaga 1800
agtgttttca gaacagtaaa actcattagg aggactgcct atgggttttt cattcacaag 1860
tgagtcacag atgaaggcag ctgttgttgg attataaact actggctctt ctgaaggacc 1920
gggtacagac gcttgcatga gaccaccatc ttgtatactg ggtgatgatg ctggatcttg 1980
gacagacatg ttttccaaag aagaggaagc acaaaacgca agcgaaagat ctgtaaggac 2040
t 2041
```

<210> 17

<211> 235

<212> DNA

<213> Homo sapiens

```
<210> 18
<211> 2732
<212> DNA
<213> Homo sapiens
```

<400> 18						
gtgtggagtt	tcagctgcta	ttagctataa	gagctatgga	acagaaaaag	cttgctggct	60
tcattgttat	aactacttta	tatggagctt	cattggacct	gttaccttca	ttattctgct	120
aaatattatc	tctctgggtg	tcacattgtt	caaaatgggt	aagcattcaa	acactttgaa	180
accagattct	agcaggttgg	aaaacattaa	ctcttgggtg	ctttggcgct	tcgctcttct	240
gtgtcttctt	ggcctcacct	ggctccttgg	gttgcttttt	attaatgagg	agactattgt	300
gatggcatat	ctcttcacta	tatttaatgc	tttccaggga	gtgttcattt	tcatctttca	360
ctgtgctctc	caaaaagaaag	tacgaaaaga	atatggcaag	tgcttcagac	actcatactg	420
ctgtggaggc	ctcccaactg	agagctccca	cagttcagtg	aaggcattcaa	ccaccagaac	480
cagtgctcgc	tattcctctg	gcacacagag	tcgtataaga	agaatgtgga	atgatactgt	540
gagaaaacaa	tcagaatctt	cttttatctc	aggtgacatc	aatagcactt	caacacttaa	600
tcaaggtggc	ataaatctta	atatattatt	acaggactga	catcacatgg	tctgagagcc	660
catcttcaag	atttatatca	tttagaggac	attcactgaa	caatgccagg	gatacaagtg	720
ccatggatac	tctaccgcta	aatggtaatt	ttaacaacag	ctactcgctg	cacaaggggtg	780
actataatga	cagcgtgcga	gttgtggact	gtggactaag	tctgaatgat	actgcttttg	840
agaaaatgat	cattttcagaa	ttagtgcaca	gtcaactacg	gggcagcagc	aagactcaca	900
acctcgagct	cacgctacca	gtcaaacctg	tgattggagg	tagcagcagt	gaagatgatg	960
ctattgtggc	agatgcttca	tctttaatgc	acagcgacaa	cccagggctg	gagctccatc	1020
acaaagaact	cgaggcacca	cttattcctc	agcggactca	ctcccttctg	taccaacccc	1080
agaagaaagt	gaagtccgag	ggaactgaca	gctatgtctc	ccaactgaca	gcagaggctg	1140
aagatcacct	acagtccccc	aacagagact	ctctttatac	aagcatgcc	aatcttagag	1200
actctcccta	tccggagagc	agccctgaca	tggagaaga	cctctctccc	tccaggagga	1260
gtgagaatga	ggacattttac	tataaaagca	tgccaaatct	tggagctggc	catcagcttc	1320
agatgtgcta	ccagatcagc	aggggcaata	gtgatggtta	tataatcccc	attaacaaag	1380
aaggggtgat	tccagaagga	gagtgttag	aggacaaat	gtcagtggtt	acaagctctt	1440
aatcatcacg	ctaaggaatt	ccaagggcca	catgcagata	tgaataaata	aagaccat	1500
tggcctgacg	cagctccctc	aaactctgct	tgaagagatg	actcttgacc	tgtggttctc	1560
tgggtgtaaaa	aagatgactg	aaccttgacg	ttctgtgaat	ttttataaaa	catacaaaaa	1620
ctttgtatat	acacagagta	tactaaagtg	aattatttgt	tacaaagaaa	agagatgcc	1680
gccaggtatt	ttaagattct	gctgctgttt	agagaaaatt	tgaaaaacag	aaaaacaaa	1740
tttccagcca	ttttactgca	gcagctctgt	aactaaaatt	gtaaaatag	ctgcaccatt	1800
tttgtaggcc	tgcattgtat	tatatacaag	acgtaggctt	taaaatcctg	tgggacaaat	1860
ttactgtacc	ttactattcc	tgacaagact	tggaaaagca	ggagagatat	tctgcatcag	1920
tttgcagttc	actgcaaact	ttttacatta	aggcaaagat	tgaaaacatg	cttaaccact	1980
agcaatcaag	ccacaggcct	tattttcatat	gtttcctcaa	ctgtacaatg	aactattctc	2040
atgaaaaaat	gctaagaaaa	tatatatttg	ttctattgtc	agggtaaaat	aaatacattt	2100
gtgtccaact	gaaatataat	tgtcattaaa	ataattttaa	agagtgaaga	aaatatgtgt	2160
aaaagctctt	ggttgcacat	gttatgaaat	gttttttctt	acactttgtc	atggtaagtt	2220
ctactcattt	tcacttcttt	tccactgtat	acagtgttct	gctttgacaa	agttagtctt	2280
tattactttac	atttaaaatt	cttatttgcca	aaagaacgtg	ttttatgggg	agaaacaaa	2340
cttttgaaag	cagtttatgtc	atgccttgca	caaaagtgat	gaaattctaga	aaagattgtg	2400
tgtcaccctt	gtttattctt	gaacagaggg	caaaaggggc	actgggcact	tctcacaac	2460
tttctagtga	acaaaagggtg	cctattcttt	tttaaaaaaa	taaaataaaa	cataaatatt	2520
actcttccat	attccttctg	cctatatatta	gtaatttaatt	tattttatga	taaagttcta	2580
atgaaatgta	aattgtttca	gcaaaaattct	gctttttttt	catccctttg	tgtaaacctg	2640
ttaataatga	gcccattact	aataatccag	gtaaagttta	acacgggttg	acagtaata	2700
aatgtgaatt	ttttcaagtt	aaaaaaaaaa	aa			2732

<210> 19  
 <211> 276  
 <212> DNA  
 <213> Homo sapiens

<400> 19  
 ctccctaaat gattttaaaa taaattggat aaacatatga tataaagtgg gtacttttaga 60  
 aaccgccttt gcatattttt tatgtacaaa tctttgtata caattccgat gttcctttata 120  
 tattccctat atagcaaac aaaccagga cctcccaact gcatgcctca agtccctgtg 180  
 gagcactctg gcaactggat ggccctactt gctttctgac aaaatagctg gaaaggagga 240  
 gggaccaatt aaatacctcg gccgcgacca cgctgg 276

<210> 20  
 <211> 2361  
 <212> DNA  
 <213> Homo sapiens

<400> 20  
 attgtaccag ccttgatgaa cgtgggccct gcttcgcttt tgagggccat aagctcattg 60  
 cccactgggt tagaggetac cttatcattg tctcccgtga ccggaagggt tctcccaagt 120  
 cagagttttac cagcagggat tcacagagct ccgacaagca gattctaaac atctatgacc 180  
 tgtgcaacaa gtccatagcc tatagcaccg tctttgagga tgtagtggat gtgcttgctg 240  
 agtggggctc cctgtacgtg ctgacgcggg atgggcgggt ccacgcactg caggagaagg 300  
 acacacagac caaactggag atgctgttta agaagaacct atttgagatg gcgattaacc 360  
 ttgccaagag ccagcatctg gacagtgatg ggctggccca gattttcatg cagtatggag 420  
 accatctcta cagcaagggc aaccacgatg gggctgtcca gcaatataat cgaaccattg 480  
 gaaagtggga gccatcctac gtgatccgca agtttctgga tgcccagcgc attcacaacc 540  
 tgactgccta cctgcagacc ctgcaccgac aatccctggc caatgcccac cataccacc 600  
 tgctcctcaa ctgctatacc aagctcaagg acagctcgaa gctggaggag ttcatacaga 660  
 aaaagagtga gagtgaagtc cactttgatg tggagacagc catcaagggt ctcgggcagg 720  
 ctggctacta ctcccattgct ctgtatctgg cggagaacca tgcacatcat gagtgggtacc 780  
 tgaagatcca gctagaagac attaagaatt atcaggaagc ccttcgatac atcggcaagc 840  
 tgcccttttga gcaggcagag agcaacatga agcgtacagg caagatcctc atgcaccaca 900  
 taccagagca gacaaactcag ttgctgaagg gactttgtac tgattatcgg ccagcctctg 960  
 aaggccgcag cgatagggag gccccaggct gcagggccaa ctctgaggag ttcataccca 1020  
 tctttgcaa taaccgcga gagctgaaag ccttcctaga gcacatgagt gaagtgcagc 1080  
 cagactcacc ccaggggatc tacgacacac tccttgagct gcgactgcag aactgggccc 1140  
 acgagaagga tccacaggtc aaagagaagc ttcacgcaga ggccatttcc ctgctgaaga 1200  
 gtggctcgct ctgcgacgct cctgcacaagg ccttggtcct gtgccagatg cagcacttcc 1260  
 aggatggtgt cctttacctt tatgagcagg ggaagctgtt ccagcagatc atgcactacc 1320  
 acatgcagca cgagcagtag cggcaggtca tcagcgtgtg tgagcgccat ggggagcagg 1380  
 accctcctt gtgggagcag gccctcagct acttcgctcg caaggaggag gactgcaagg 1440  
 agtatgtggc agctgtcctc aagcatatcg agaacaagaa cctcatgcca cctcttctag 1500  
 tgggtgcagac cctggccac aactccacag ccacactctc cgtcatcagg gactacctgg 1560  
 tccaaaaact acagaaacag agccagcaga ttgcacagga tgagctgcgg gtgcccgggt 1620  
 accgagagga gaccaccgt atccgccagg agatccaaga gctcaaggcc agtcctaaga 1680  
 ttttccaaaa gaccaagtgc agcatctgta acagtgccct ggagttgcc tcagtccact 1740  
 tcctgtgtgg cactccttc caccaacact gctttgagag ttactcgga agtgatgctg 1800  
 actgccccac ctgcctccct gaaaaccgga aggtcatgga tatgatccgg gccaggaac 1860  
 agaaacgaga tctccatgat caattccagc atcagctcaa gtgctccaat gacagctttt 1920  
 ctgtgattgc tgactacttt ggcagagggt ttttcaacaa attgactctg ctgaccgacc 1980  
 ctcccacagc cagactgacc tccagcctgg aggctgggct gcaacgcgac ctactcatgc 2040  
 actccaggag gggcacttaa gcagcctgga ggaagatgtg ggcaacagtg gaggaccaag 2100  
 agaacagaca caatgggacc tgggcgggctg ttacacagaa ggctggctga catgcccagg 2160  
 gctccactct catctaagt cacagccctc acaagactaa agcggaaact tttcttttcc 2220  
 ctggccttcc ttaattttaa gtcaagcttg gcaatccctt cctctttaac taggcaggtg 2280  
 ttagaatcat ttccagatta atggggggga aggggaacct caggcaaac tcctgaagtt 2340

ttggaaaaaa aagctggttt c

2361

<210> 21

<211> 179

<212> DNA

<213> Homo sapiens

<400> 21

aggtgttaga tgctcttgaa aaagaaactg catctaagct gtcagaaatg gattctttta 60  
acaatcaact aaaggaactg agagaaacct acaacacaca gcagtttagcc cttgaacagc 120  
tttataagat caacgtgaca agttgaagga aattgaaagg aaaaaattag aactaatgc 179

<210> 22

<211> 905

<212> DNA

<213> Homo sapiens

<400> 22

tttttttttt ttctttaacc gtgtggtctt tatttcagtg ccagtgttac agatacaaca 60  
caaatgttcc agttagaagg aattcaaacg gaatgccaaag gtccaagcca ggctcaagaa 120  
ataaaaaggg aggtttggag taatagataa gatgactcca atactcactc ttcctaaggg 180  
caaaggtact ttgatacag agtctgatct ttgaaactgg tgaactcctc ttccacccat 240  
taccatagtt caaacaggca agttatgggc ttaggagcac tttaaaattt gtggtgggaa 300  
tagggtcatt aataactatg aatatactt ttagaagggt accattttgc actttaagg 360  
gaatcaattt tgaaaatcat ggagactatt catgactaca gctaaagaat ggcgagaaag 420  
gggagctgga agagccttgg aagtttctat taaaaataga gcaccatatt cttcatgcca 480  
aatctcaaca aaagctcttt ttaactccat ctgtccagtg tttacaaata aactcgcaag 540  
gtctgaccag ttcttggtaa caaacatata tgtgtgtgtc tgtgtgtata cagcaatgca 600  
cagaaaaggc taccaggagc ctaatgcctc tttcaaacat tgggggaacc agtagaaaaa 660  
ggcagggctc cctaattgtc attattacat ttccattccg aatgccagat gttaaaagt 720  
cctgaagatg gtaaccagc tagtgaggaa taaatacccc accttgccca gtccacagag 780  
aaacaacagt agaaagaagg ggcaactctt tgctgcagag acaaagttag tgctttttcg 840  
ccatggattg cagtcctctc ctccagacca gctgcttatt tctcagggg cccaggggaat 900  
gttga 905

<210> 23

<211> 2134

<212> DNA

<213> Homo sapiens

<400> 23

ggctctttct ttcttttttt tttttccaaa agtggtcttt tatttctagt aacatatatt 60  
gtataaatac tctattttat atgcacttcc acaaaagcga tataatttaa aagttttttt 120  
cattagaaat aaatgtataa aaataaatat gttattatag gcatttatta ctaactatag 180  
tccttcttgg aaggaacacc caaaccaata cttataaagt acatgtaatt tatagtaaca 240  
tattttacta tatacatatg gaaaaaatca tattctcaca gaagagctga acagacattc 300  
accaggatac gactgttggg ccagctgctg gagatggacc tgctaccctc cagcagcctc 360  
cccaccacaa gacaagtgat ctcaatgtcc ccaaacctgt gggaccctgt tctacacacc 420  
tcatttttgt tccggcggtt catcctcctt gtgtgattgt actgattttc atgagacaca 480  
agttacttct ttacatccat attcccaaag caggggtaca tggtaggaaa gaaaggaagt 540  
tggaggtact aagctcattg tgtctcctct agcttttacc agcatctaatt gcttccactgc 600  
tttttttcca ttgtagactt taatgcactt gaataaatac atggagttgt tttttcctca 660  
aaatgaatta cacaaataaa gactgaatg gtccaaaaa ggaaagagga agccatttgc 720  
gttattttcac gttgctgagc ctttctctca tgttgaacaa tctgaagttt taattctcgg 780  
tagaaataat gtataaacat tctctgaaac catagcagcc ataaacagt ctgggtcaaag 840  
atcctatatt tactcctttc tccccccatt gttagtgagg taaagtaaaa caggtcttag 900  
taaaatctca cttttctcct acttttctatt tcccaacccc catgatacta agtatttgat 960  
aagtaccagg aaacaggggt tgtaatagtt ctaacttttt ttgacaattg ctttgttttt 1020

```

tctaaacttg taatagatgt aacaaaagaa ataataataa taatgcccgg ggctttatta 1080
tgctatatca ctgctcagag gttaataatc ctactaact atcctatcaa atttgcaact 1140
ggcagtttac tctgatgatt caactccttt tctatctacc cccataatcc caccttactg 1200
atacacctca ctggttactg gcaagatacg ctggatccct ccagccttct tgctttccct 1260
gcaccagccc ttctctcactt tgccctggccc tcaaagctaa caccacttaa accacttaac 1320
tgcattctgc cattgtgcaa aagtctatga aatgtttagg tttctttaaa ggatcacagc 1380
tctcatgaga taacacccct ccctcatggg acagacactt caagcttctt tttttgtaac 1440
ccttcccaca ggtcttagaa catgatgacc actccccag ctgccactgg gggcagggat 1500
ggtctgcaca aggtctgggt ctggctgggt tcaacttcct tgcacactcg gaagcaggct 1560
gtccattaat gtctcggcat tctaccagtc ttctctgcca acccaattca catgacttag 1620
aacattcgcc ccactcttca atgacccatg ctgaaaaagt ggggtagca ttgaaagatt 1680
ccttcttctt ctttacgaag taggtgtatt taattttagg tcgaaggcca ttgcccacag 1740
taagaacctg gatggctcaag ggctctttga gagggctaaa gctgcgaatt ctttccaatg 1800
ccgcagagga gccgctgtac ctcaagacaa cacctttgta cataatgtct tgctctaagg 1860
tggacaaagt gtagtcacca ttaagaatat atgtgccatc agcagctttg atggcaagaa 1920
agctgccatt gttcctggat cccctctggt tccgctgttt cacttcgatg ttggtggctc 1980
cagttggaat tgtgatgata tcatgatata caggttttgc actagtaact gatcctgata 2040
tttttttaca agtagatcca ttccccccgc aaacaccaca tttatcaaac ttctttttgg 2100
agtctatgat gcgatcacia ccagctttta caca 2134

```

<210> 24

<211> 1626

<212> DNA

<213> Homo sapiens

<400> 24

```

ggacaatttc tagaatctat agtagtatca ggatatatct tgctttaaaa tatattttgg 60
ttattttgaa tacagacatt ggctccaaat tttcatcttt gcacaatagt atgacttttc 120
actagaactt ctcaacattt gggaaacttt caaatatgag catcatatgt gttaaggctg 180
tatcatttaa tgctatgaga tacattgttt tctccctatg ccaaacaggt gaacaaagct 240
agttgttttt tactgatact aaatgttggt tacctgtgat tttatagtat gcacatgtca 300
gaaaaaggca agacaaatgg cctctgttac tgaatacttc ggcaaactta ttgggtcttc 360
atcttctgac agacaggatt tgactcaata tttgtagagc ttgcgtagaa tggattacat 420
ggtagtgtatg cactggtaga aatgggtttt agttattgac tcagaattca tctcaggatg 480
aatcttttat gtctttttat tgtaagcata tctgaattta ctttataaag atgggttttag 540
aaagctttgt ctaaaaattt ggcttaggaa tggtaacttc attttcagtt gccaaagggt 600
agaaaaataa tatgtgtgtt gttatgttta tggtaacata ttattaggta ctatctatga 660
atgtatttaa atatttttca tattctgtga caagcattta taatttgcaa caagtggagt 720
ccatttagcc cagtgggaaa gtcttggaac tcagggtacc cttgaaggat atgctggcag 780
ccatctcttt gatctgtgct taaactgtaa tttatagacc agctaaatcc ctaacttggg 840
tctggaatgc attagttatg ccttgtacca ttcccagaat ttccaggggca tctgtgggtt 900
ggtctagtga ttgaaaacac aagaacagag agatccagct gaaaaagagt gatcctcaat 960
atcctaacta actggtcttc aactcaagca gagtttcttc actctggcac tgtgatcatg 1020
aaacttagta gaggggattg tgtgtatttt atacaaattt aatacaatgt cttacattga 1080
taaaattctt aaagagcaaa actgcatttt atttctgcat ccacattcca atcatattag 1140
aactaagata tttatctatg aagatataaa tgggtgcagag agactttcat ctgtggattg 1200
cgttgtttct tagggttcct agcactgatg cctgcacaag catgtgatat gtgaaataaa 1260
atggattctt ctatagctaa atgagttccc tctggggaga gttctggtag tgcaatcaca 1320
atgccagatg gtgtttatgg gctatttgtg taagtaagtg gtaagatgct atgaagtaag 1380
tgtgtttgtt ttcattctat ggaaactctt gatgcattgt cttttgtatg gaataaattt 1440
tggtgcaata tgatgtcatt caactttgca ttgaattgaa ttttggttgt atttatatgt 1500
attatacctg tcacgcttct agttgcttca accattttat aaccattttt gtacataattt 1560
tacttgaaaa tatttttaaat ggaaatttaa ataaacattt gatagtttac ataataaaaa 1620
aaaaaa 1626

```

<210> 25

<211> 1420

<212> DNA  
<213> Homo sapiens

<400> 25

```

gttcagcatt gtttctgctt ctgaaatctg tatagtacac tggtttgtaa tcattatgtc 60
ttcattgaaa tccttgctac ttctcttcct cctcaatgaa agacacgaga gacaagagcg 120
acacaagctt aagaaaaacg agcaaggaag agtatcttca ttattctcat tttctctgag 180
ttggaaacaa aaacatgaag gactccaact agaagacaga tatttacatt taaatagatt 240
agtgggaaaa ctttaagagt ttccacatat tagttttcat tttttgagtc aagagactgc 300
tccttgctact gggagacact agtagtatat gtttgtaatg ttactttaaa attatctttt 360
tattttataa ggcccataaa tactgggttaa actctgttaa aagtgggcct tctatcttgg 420
atggtttcac tgccatcagc catgctgata tattagaaat ggcatcccta tctacttact 480
ttaatgctta aaattatata taaaatgctt tatttagaaa acctacatga tacagtgggtg 540
tcagccttgc catgtatcag tttcacttga aatttgagac caattaaatt tcaactgttt 600
aggggtggaga aagagggtact ggaaaacatg cagatgagga tatcttttat gtgcaacagt 660
atcctttgca tgggaggaga gttactcttg aaaggcaggg agcttaagtg gacaatgttt 720
tgtatatagt tgagaatttt acgacacttt taaaaattgt gtaattgtta aatgtccagt 780
tttgctctgt tttgctgaa gtttttagtat ttgttttcta ggtggacctc tgaaaaccaa 840
accagtacct ggggagggtta gatgtgtgtt tcaggccttg agtgtatgag tggttttgct 900
tgtattttcc tccagagatt ttgaacttta ataattgcgt gtgtgttttt ttttttttaa 960
gtggccttgt ttttttttct caagtaaaat tgtgaacata tttcctttat aggggcaggg 1020
catgagttag ggagactgaa gagtattgta gactgtacat gtgccttctt aatgtgtttc 1080
tcgacacatt ttttttcagt aacttgaaaa ttcaaaaggg acatttggtt aggttactgt 1140
acatcaatct atgcataaat ggcagcttgt tttcttgagc cactgtctaa attttgtttt 1200
tatagaaatt ttttatactg attggttcat agatggctag ttttgtagac agactgaaca 1260
atacagcact ttgccaaaaa tgagtgtagc attgtttaaa cattgtgtgt taacacctgt 1320
tctttgtaat tgggttgtgg tgcattttgc actacctgga gttacagttt tcaatctgtc 1380
agtaataaaa gtgtccttta acttcaaaaa aaaaaaaaaa 1420

```

<210> 26  
<211> 689  
<212> DNA  
<213> Homo sapiens

<400> 26

```

aaacaaacaa aaaaaaagtt agtactgtat atgtaaatac tagcttttca atgtgctata 60
caaacaatta tagcacatcc ttctttttac tctgtctcac ctcttttagg tgagtacttc 120
cttaataaag tgctaaacat acatatacgg aacttgaaaag ctttggttag ccttgcctta 180
ggtaatcagc ctagttttaca ctgtttccag ggagtagttg aattactata aaccattagc 240
cacttgcttc tgcaccattt atcacaccag gacagggctc ctcaacctgg gcgctactgt 300
catttggggc caggtgattc ttctttgcaa gggctgtcct gtacctgccc gggcgccgc 360
tcgaagcgtg gtgcggcccg aggtactgaa aggaccaagg agctctggct gccctcagga 420
attccaaatg accgaaggaa caaagcttca gggctctggg tgggtgtctc cactattcag 480
gaggtggctg gaggtaacgc agcttcattt cgtccagtc tttccagtat ttaaagtgt 540
tgtcaagatg ctgcattaaa tcaggcaggt ctacaaaggc atcccaagca tcaaactatgt 600
ctgtgatgaa gtaatcaatg aaacaccgga acctccgacc acctcctgaa tagtgggaga 660
cacaccaga gcctgaagtt tgccttctg 689

```

<210> 27  
<211> 471  
<212> DNA  
<213> Homo sapiens

<400> 27

```

tcccagcggc atgaagtttg agattggcca ggccctgtac ctgggcttca tctccttcgt 60
ccctctcgct cattgggtggc accctgcttt gcctgtcctg ccaggacgag gcaccctaca 120
agccctaacc caggccccgc ccagggccac cagcaccact gcaaacaccg cacctgccta 180
ccagccacca gctgcttaca aagacaatcg gggccctca gtgacctcgg ccaccacagc 240

```

```

gggtacaggc tgaacgacta cgtgtgagtc cccacagcct gcttctcccc tgggctgctg 300
tgggctggtt cccggcgagg ctgtcaatgg aggcaggggt tccagcacia agtttacttc 360
tgggcaattt ttgtatccaa ggaaataatg tgaatgcgag gaaatgtctt tagagcacag 420
ggacagaggg ggaaataaga ggaggagaaa gctctctata ccaaagactg a 471

```

<210> 28

<211> 929

<212> DNA

<213> Homo sapiens

<400> 28

```

ggtgaactca gtgcattggg ccaatgggtc gacacaggct ctgccagcca caaccatcct 60
gctgcttctg acggtttggc tgctgggtgg ctttcccctc actgtcattg gaggcattct 120
tgggaagaac aacgccagcc cctttgatgc accctgtcgc accaagaaca tcgcccggga 180
gattccaccc cagccctggt acaagtctac tgtcatccac atgactgttg gaggcttcct 240
gcctttcagt gccatctctg tggagctgta ctacatcttt gccacagtat ggggtcgagg 300
gcagtacact ttgtacggca tctcttctt tgctctcgcc atcctgctga gtgtgggggc 360
ttgcatctcc attgcactca cctacttcca gttgtctggg gaggattacc gctgggtggg 420
gcatctgtg ctgagtgtg gctccaccgg cctcttcctc ttcctctact cagttttcta 480
ttatgcccg cgctccaaca tgtctggggc agtacagaca gtagagtctc tcggctactc 540
cttactcact ggttatgtct tcttccctcat gctgggcacc atctcctttt tttcttccct 600
aaagttcatc cgggtatatc atgttaacct caagatggac tgagtctgt atggcagaac 660
tattgctgtt ctctcccttt cttcatgccc tgttgaactc tcctaccagc ttctctctg 720
attgactgaa ttgtgtgatg gcattgttgc cttccctttt tccctttggg cattccttcc 780
ccagagaggg cctggaaatt ataaatctct atcacataag gattatatat ttgaactttt 840
taagttgcct ttagtttttg tcttgatttt tctttttaca attacaaaaa taaaatttat 900
taagaaaaag aaaaaaaaaa aaaaaaaaaa 929

```

<210> 29

<211> 1775

<212> DNA

<213> Homo sapiens

<400> 29

```

gaacgtgatg ggaacttttg gaggatgtct gagaaaatgt ccgaagggat tttggccaac 60
accagaaaaa gccaatgtcc taggaattcc ctcccaaaat gcttcccaaa aaattactca 120
ttgacaattc aaattgcact tggctggcgg cagcccgggc ggccttcagt cctgtgtggg 180
cgccccgctg gccttctcct cgtaggactc cccaaactcg ttcactctgc gtttatccac 240
aggataaaag caccgctggt acaggtagac cagaaacacc acgtcgtccc ggaagcaggc 300
cagccgglga gacgtgggca tgggtgatgat gaaggcaaa acgtcatcaa tgaaggtgtt 360
gaaagccttg taggtgaagg ccttccaggg cagatgtgcc actgacttca acttgtagt 420
caciaaagagc tggggcagca tgaagaggaa accaaaggca tagaccccg tgacgaagct 480
gttgattaac caggagtacc agctcttata tttgatattc aggagtgaat agacagcacc 540
cccagacag agagggatca gcaggatga caagtacttc atggcctgag tatcgtactc 600
ctcggttttc ctctcagatt cgtgtgaagt gccaaactga aattcgggca tcaggcctct 660
ccaaaaata gtcattctca atgccttctt cactttccac agctcaatgg cggctccaac 720
accgcgggg accagcacca gcaggctcgt ctgctcgtcc agcaggaaca gaaagatgac 780
cacggtgctg aagcagcgcc agagcactgc cttgggtggac atgccgatca tgctcttct 840
cttcttccag aaactgatgt cattttttaa ggccaggaaa tcaaagagaa gatggaacgc 900
tgcgacaaag aaggtcagcg ccaggaagta taagttggta tctacaaaaa ttcctttcac 960
ctcatcagca tctttctctg aaaacccgaa ctgctgcagg gagtacacgg cgtcctgcat 1020
gtggatccag aagcgcagcc gcccagtgta gacctgtctg taggacacgg tgaggggag 1080
ctcgggtggt gagcggttta tgaccatcag gtccttcacg cgggtgtgta gctggctgat 1140
gaacaggatg ggcaggtaat gcacggtttt cccagctgg atcatcttca tgtaccgatg 1200
cacatcgga ggcagggagg acccgtcaaa gacaaagtgt tccgccatca cgttcagcgc 1260
cagcccggt cgccagtggt acaactggctc atccagggca ctcgtcggct tcttctccgc 1320
ctcgatctgc tgtgtatcag actccccggt gagcagggtt atttcttctg gcttggggac 1380
catgtagggt gtcagaggac tgaccagggt cacctgcttc ccgtcgtgcc acggcaggac 1440

```



```

cccagcgtga tggaggaaga tgtaggcata cagcgtccca ttgtttctcg ttttctttgg 1500
tacagaaaca ttaactgtcc tttcaaattt ggactccaca tcaaagtctt ccacattcaa 1560
gaccaggtcg atgttgttct cagcaccagc gtgggacctc gtcgtggtgt acacgctcag 1620
ctgcagcttg ggccgcccgc ccaggtaggg ctggatgcag ttggcgtcgc cggagcacgg 1680
gcgggtgtag acgatgccgt acatgaccca gcaggtgtgc accacgtaga ccacgaacac 1740
gccaccacc aagctggtga aggagctgcg gcccc 1775

```

```

<210> 30
<211> 1546
<212> DNA
<213> Homo sapiens

```

```

<400> 30
aaaataagta ggaatgggca gtgggtattc acattcacta caccttttcc atttgcta 60
aaggccctgc caggctggga gggaattgtc cctgcctgct tctggagaaa gaagatattg 120
acaccatcta cgggcaccat ggaactgctt caagtgaaca ttctttttct tctgcccagt 180
atttgcagca gtaacagcac aggtgtttta gaggcagcta ataattcact tgttgttact 240
acaacaaaac catctataac aacacaaaac acagaatcat tacagaaaaa tgttgtcaca 300
ccaacaactg gaacaactcc taaaggaaca atcaccaatg aattacttaa aatgtctctg 360
atgtcaacag ctactttttt aacaagtaaa gatgaaggat tgaaagccac aaccactgat 420
gtcaggaaga atgactccat catttcaaac gtaacagtaa caagtgttac acttccaaat 480
gctgtttcaa cattacaaag ttccaaaccc aagactgaaa ctccagagttc aattaaaaa 540
acagaaatac caggtagtgt tctacaacca gatgcacac cttctaaaac tggtagatta 600
acctcaatac cagttacaat tccagaaaac acctcacagt ctcaagtaat aggcactgag 660
ggtggaaaaa atgcaagcac ttcagcaacc agccggtctt attccagtat tattttgccg 720
gtggttattg ctttgattgt aataacactt tcagtatttg ttctggtggg tttgtaccga 780
atgtgctgga aggcagatcc gggcacacca gaaaatggaa atgatcaacc tcagtctgat 840
aaagagagcg tgaagcttct taccgttaag acaattttct atgagtctgg tgagcactct 900
gcacaaggaa aaaccaagaa ctgacagctt gaggaattct ctccacacct aggcataat 960
tacgtttaat cttcagcttc tatgcaccaa gcgtggaaaa ggagaaagtc ctgcagaatc 1020
aatcccgact tccatacctg ctgctggact gtaccagacg tctgtcccag taaagtgatg 1080
tccagctgac atgcaataat ttgatggaat caaaaagaac cccggggctc tcctgttctc 1140
tcacatttaa aaattccatt actccattta caggagcggt cctaggaaaa ggaattttag 1200
gaggagaatt tgtgagcagt gaatctgaca gccaggaggg tgggctcgct gataggcatg 1260
actttcctta atgtttaaag ttttcggggc caagaatttt tatccatgaa gactttccta 1320
ctttctcggg tgttcttata ttacctactg ttagtattta ttgtttacca ctatgttaat 1380
gcagggaaaa gttgcacgtg tattattaaa tattaggtag aaatcatacc atgctacttt 1440
gtacatataa gtattttatt cctgctttcg tgttactttt aataaataac tactgtactc 1500
aatactctaa aaatactata acatgactgt gaaaatggca aaaaaa 1546

```

```

<210> 31
<211> 750
<212> DNA
<213> Homo sapiens

```

```

<400> 31
cacttgggca cccccatttt ctaaaaaaat ggaaatctgg agggcaaaaa aggtgtgctg 60
aagggaaagt cctctgatgg cccaaaaaac ttcttccaaa ctagtgtagg aatggaatgg 120
atagcaaatg gatccttttt ggccctcttt ggagcatgcc ttccctatct tatccttggc 180
ccactaaag cagaacgtta cggatatttc tgtttttgcc attggatgcc tatctggcca 240
aacagccttt ccctaattgg aaaatgcagt cctgttttaa acctttgatt tacgactact 300
tgtacatgct tgctcattac aattttgaca ttttttacat agtgaagacc ccaaacatat 360
cagtgaaca tgacaagatc ataaagaaca gtatcatatt attatttagt cgcttttaca 420
gtggcaagcc aattttgaaa tatctcattt aaaactcaga cccaattcac tgagttatac 480
ttttaatagc ttctcagca cactattttc catgcattaa atatgataaa ataactatc 540
actgccatc ggtcttgtaa aaaggaagtc tgaatacaga gccacaaca ctaaaattgt 600
ttttctagct acaaagtata gcatcatcaa cacagacacg atttggactc cctgacaggt 660
ggattggaaa acggtgttta aagagaagag aacattttta cataaatgtc attagaatc 720

```

ccaaaggcct tatttgtcac caccgtcccc

750

&lt;210&gt; 32

&lt;211&gt; 1620

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 32

```

gcaattcccc cctcccaacta aacgactccc agtaattatg tttacaaccc attggatgca 60
gtgcagccat tcataagaac cttggtgccc cagaaaaatc tgtccttttt ggtaccaaac 120
ctgagggtctt ttggaagata atgtagaaaa ccaactaccta ttgaaggcct gttttggcta 180
atctgtgcaa actctgatga tacctgcctt atgtggattc ttttccacac tgctttcatt 240
tttaagtata aagacttaga aaactagaat aatgctttta caaataatta aaagtatgtg 300
atgttctggg ttttttcctt ctttttagaa ccccgccctc atttaaaaaa ttaaaaaaaa 360
aaaaaaaaact tttaacattt aaaaaataaa aattaacaaa atttcaacta ttccaggaca 420
cgctggcatt tggactcaat gaaaagggca cctaaagaaa ataaggctga ctgaatgttt 480
tccataattt tcacacaata acagtcctt tctatccagc ttgccttcca tttatctcta 540
gggttagctt ttcaggcaac atccttggtc attgcccaga aagtacctga gctatcagtg 600
attggaatgg cacaggaaac cgaatcacat gggcgccctc cccttggttt tcaagtatct 660
tggagtgtgt cacaaaaatt aggtcatgcc ttcagtgtct tgttctttta acctaccctt 720
tgacaatcag gtgctaataa ttgtatacta ttaaaaccag cacataagta ttgtaaatgt 780
gtgttcctcc taggttgga gaaatgtctt tccttctatc tgggtcctgt taaagcgggt 840
gtcagttgtg tcttttcacc tcgatttgtg aattaataga attgggggga gaggaatga 900
tgatgtcaat taagtttcag gtttgcatg atcatcattc tcgatgatat tctcactttg 960
tcgcaaatct gcccttatcg taagaacaag ttccagaatt ttccctccac tatacgactc 1020
cagtattatg tttacaatcc attggatgag tgcagcatta taagaccttg gtgccagaa 1080
aaatctgtcc tttttggtac caaacctgag gtcttttgga agataatgta gaaaaccact 1140
acctattgaa ggctgtttt ggctaactct tgcaaacctc gatgatacct gcttatgtgg 1200
attcttttcc acactgcttt catttttaag tataaagact tagaaaaacta gaataatgct 1260
tttacaataa attaaaagta tgtgatgttc tgggtttttt ccttcttttt agaaccctgt 1320
atttaacaaa gccttctttt taagtcttgt ttgaaattta agtctcagat cttctggata 1380
ccaaatcaaa aacccaacgc gtaaaacagg gcagtatttg tgttcctaata tttaaaaagc 1440
tttatgtata ctctataaat atagatgcat aaacaacact tccccttgag tagcacatca 1500
acatacagca ttgtacatta caatgaaaat gtgtaaacta agggatttat atatataaat 1560
acatatatac ctttgaaccc tttatactgt aaataaaaaa gttgctttag tcaaaaaaaa 1620

```

&lt;210&gt; 33

&lt;211&gt; 2968

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 33

```

gaaaaagtag aaggaaacac agttcatata gaagtaaaag aaaaccctga agaggaggag 60
gaggaggaag aagaggaaga agaagatgaa gaaagtgaag aggaggagga agaggaggga 120
gaaagtgaag gcagtgaagg tgatgaggaa gatgaaaagg tgtcagatga gaaggattca 180
gggaagacat tagataaaaa gccaaagtaa gaaatgagct cagattctga atatgactct 240
gatgatgatc ggactaaaga agaaagggct tatgacaaaag caaaacggag gattgagaaa 300
cggcgacttg aacatagtaa aaatgtaaac accgaaaagc taagagcccc tattatctgc 360
gtacttgggc atgtggacac agggaagaca aaaattctag ataagctccg tcacacacat 420
gtacaagatg gtgaagcagg tggatatcaca caacaaattg gggccaccaa tgttcctctt 480
gaagctatta atgaacagac taagatgatt aaaaattttg atagagagaa tgtacggatt 540
ccaggaatgc taattattga tactcctggg catgaatctt tcagtaatct gagaaataga 600
ggaagctctc tttgtgacat tgccatttta gttgttgata ttatgcatgg tttggagccc 660
cagacaattg agtctatcaa ccttctcaaa tctaaaaaat gtcccttcat tgttgactc 720
aataagattg ataggttata tgattggaaa aagagtcctg actctgatgt ggctgctact 780
ttaaagaagc agaaaaagaa taaaaaagat gaatttgagg agcgagcaaa ggctattatt 840
gtagaatttg cacagcaggg tttgaatgct gctttgtttt atgagaataa agatccccgc 900
acttttgtgt ctttgggtacc tacctctgca catactgggt atggcatggg aagtctgatc 960

```

taccttcttg tagagttaac tcagaccatg ttgagcaaga gacttgcaaca ctgtgaagag 1020  
 ctgagagcac aggtgatgga gggttaaagct ctcccgggga tgggcaccac tatagatgtc 1080  
 atcttgatca atgggcgttt gaaggaagga gatacaatca ttgttcctgg agtagaagg 1140  
 cccattgtaa ctgagattcg aggcctcctg ttacctctc ctatgaagga attacgagt 1200  
 aagaaccagt atgaaaagca taaagaagta gaagcagctc agggggtaaa gattccttga 1260  
 aaagacctgg agaaaacatt ggctgggtta cccctccttg tggcttataa agaagatgaa 1320  
 atccctgttc ttaaagatga attgatccat gagttaaagc agacactaaa tgctatcaaa 1380  
 ttagaagaaa aaggagtcta tgtccaggca tctacactgg gttctttgga agctctactg 1440  
 gaatttctga aaacatcaga agtgccctat gcaggaatta acattggccc agtgcataaa 1500  
 aaagatgtta tgaaggcttc agtgatgttg gaacatgacc ctgagtatgc agtaattttg 1560  
 gccttcgatg tgagaattga acgagatgca caagaaatgg ctgatatgtt aggagttaga 1620  
 atttttagtg cagaaattat ttatcattta ttgatgcct ttacaaaata tagacaagac 1680  
 tacaagaaac agaaacaaga agaatttaag cacatagcag tatttccctg caagataaaa 1740  
 atcctccctc agtacatttt taattctcga gatccgatag tgatgggggt gacgggtgga 1800  
 gcaggtcagg tgaacagggg gacacccatg tgtgtcccaa gcaaaaattt tgttgacatc 1860  
 ggaatagtaa caagtattga aataaaccat aaacaagtgg atgttgcaaa aaaaggacaa 1920  
 gaagtttggt taaaaataga acctatccct ggtgagtcac ccaaaatgtt tggaagacat 1980  
 tttgaagcta cagatattct tgtagtaag atcagccggc agtccattga tgcactcaaa 2040  
 gactgggtca gagatgaaat gcagaagagt gactggcagc ttattgtgga gctgaagaaa 2100  
 gtatttgaaa tcatctaatt ttttcacatg gagcaggaac tggagtaa at gcaatactgt 2160  
 gttgtaatat cccaacaaaa atcagacaaa aaatggaaca gacgtatttg gacactgatg 2220  
 gacttaagta tgggaaggaag aaaaataggt gtataaaatg ttttccatga gaaaccaaga 2280  
 aacttacact ggtttgacag tggtcagtta catgtcccca cagttccaat gtgctgttct 2340  
 actcacctct ccttcccca acccttctct acttggctgc tgttttaaaag tttgcccttc 2400  
 cccaaatttg gatttttatt acagatctaa agctctttcg attttatact gattaaatca 2460  
 gtactgcagt atttgattaa aaaaaaaaaa gcagattttg tgattcttgg gacttttttg 2520  
 acgtaagaaa tacttcttta tttatgcata ttcttccac agtgattttt ccagcattct 2580  
 tctgccatat gccttttaggg cttttataaa atagaaaatt aggcattctg atatttcttt 2640  
 agctgctttg tgtgaaacca tgggtgtaaaa gcacagctgg ctgcttttta ctgcttgtgt 2700  
 agtcacgagt ccattgta atcacaatt ctaaaccaa ctaccaataa agaaaacaga 2760  
 catccaccag taagcaagct ctgttaggct tccatgggta gtggtagctt ctctccaca 2820  
 agttgtctc ctaggacaag gaattatctt aacaaactaa actatccatc acactacctt 2880  
 ggtatgccag cacctgggta acagtaggag attttataca ttaatctgat ctgtttaatc 2940  
 tgatcggttt agtagagatt ttatacat 2968

<210> 34  
 <211> 6011  
 <212> DNA  
 <213> Homo sapiens

<400> 34  
 acggggcgcc ggagcaccgc cacatcttat cctccacgcc ccactcgac tgggagcggg 60  
 accgccccgg actccccctc gggcgggcca ctcgaggagt gaggagagag gccgcccggc 120  
 cggcttgagc cgagcgcagc accccccgcg ccccgcgcca gaagtgttgt tgaaccgggc 180  
 tgccgggaga aacttttttc ttttttcccc ctctcccggg agagtctctg gaggaggagg 240  
 ggaactcccc cggcccaagg ctctgtgggt cggggtcgcg cggccgcaga aggggagggg 300  
 tccgcccgcg aggggaggcg cccccgggga cccgagaggg ggggtaggac cgcgggctgc 360  
 tgggtcgggc gcggcagcgt gtgccccgcg caggggaggg gccgcccgcg tcccggcccg 420  
 gctgcgagga ggaggcggcg gcggcgaggg aggatgtact tgggtggcggg ggacaggggg 480  
 ttggccggct gcgggcacct cctggtctcg ctgctggggc tgctgctgct gccggcgcg 540  
 tccggcaccc gggcgctggt ctgctgccc tgtgacgagt ccaagtgcga ggagcccagg 600  
 aaccgcccgg ggagcatcgt gcaggcgctc tgcggctgct gctacacgtg cgcagccag 660  
 gggaacgaga gctgcggcgg caacttcggg atttacggaa cctgcgaccg ggggctgctg 720  
 tgtgtcatcc gcccccgcgt caatggcgac tcctcaccc agtacgaagc gggcggtttg 780  
 gaagatgaga actggactga tgaccaactg cttgggttta aaccatgcaa tgaaaacctt 840  
 attgctggct gcaatataat caatgggaaa tgtgaatgta acaccattcg aacctgcagc 900  
 aatccctttg agtttccaag tcaggatatg tgcttttcag ctttaagag aattgaagaa 960  
 gagaagccag attgctccaa ggcccgcgtg gaagtccagt tctctccacg ttgtcctgaa 1020

gattctgttct	tgatcgaggg	ttatgtctcct	cctggggagtg	gctgtccctt	accagccgc	1080
tgcgtgtgca	accccgagg	ctgtctgctc	aaagtctgct	agccgggaaa	cctgaacata	1140
ctagtgtcaa	aagcctcagg	gaagccggga	gagtgtgtgt	acctctatga	gtgcaaacca	1200
gttttcggcg	tggactgacg	gactgtggaa	tgcctactgt	ttcagcagac	cgcgtgtccc	1260
cggcagagct	atgaacctca	agtcagacta	actgcagatg	gttgtgttac	tttgcacaac	1320
acgtgcgagt	gtctctctgg	cttatgtggt	ttcccctgtg	gtgaggtggg	ctccactccc	1380
cgcatagtct	ctcgtggcga	tgggacacct	ggaaagtgtc	gtgatgtctt	tgaatgtgtt	1440
aatgatacaa	agccagcctg	cgtattttaac	aatgtggaat	attatgatgg	agacatgttt	1500
cgaatggaca	actgtcgggt	ctgtcgatgc	caagggggcg	ttgccatctg	cttcacccgc	1560
cagtgtgggt	agataaaactg	cgagaggtaac	tacgtgcccc	aaggagagtg	ctgcccagtg	1620
tgtgaagatc	cagtgtatcc	ttttaataat	cccgtgtgct	gctatgccaa	tggcctgata	1680
cttggccacg	gagacgggtg	gcgggaagac	gactgcacat	tctgccagtg	cgtcaacggg	1740
gaaccgccact	gcgttgcgac	cgtctgcgga	cagacctgca	caaaccctgt	gaaagtgcct	1800
ggggagtggt	gcctgtgtgt	cgaagaacca	accatcatca	cagttgatcc	acctgcattg	1860
ggggagttat	caaactgcac	tctgacacgg	aaggactgca	ttaatgggtt	caaaccggat	1920
cacaatgggt	gtcggacctg	tcaagtgcata	aacaccagg	aactatgttc	agaacgtaaa	1980
caaggctgca	ccttgaactg	tcccttcggt	ttccttactg	atgcccaaaa	ctgtgagatc	2040
tgtgagtgcc	gccccaggcc	caagaagtgc	agaccataaa	tctgtgacaa	gttgtgtcca	2100
cttggattgc	tgaagaataa	gcacggctgt	gacatctgtc	gctgtaagaa	atgtccagag	2160
ctctcatgca	gtaagatctg	ccccttgggt	ttccagcagg	acagtcacgg	ctgtcttata	2220
tgaagtgcga	gagaggctct	tgcttcagct	gggccaccca	tctgtcggg	cacttgtctc	2280
accgtggatg	gtcatcatca	taaaaatgag	gagagtgggc	acgatgggtg	ccgggaatgc	2340
tactgtctca	atggcaggga	aatgtgtgct	ctgatcacct	gcccggtgct	gcccctgtgg	2400
aaacccacca	ttcaccttgg	acagtgtgtc	ccatcatgtg	cagatgactt	tgtggtgcag	2460
aagccagagc	tcagtactcc	ctccatttgc	cacgccctgt	gaggagaata	ctttgtggaa	2520
ggagaaacgt	ggaacattga	ctcctgtact	cagtgcacct	gccacagcgg	acgggtgctg	2580
tgtgagacag	aggtgtgccc	accgtgtctc	tgccagaacc	cctcacgcac	ccaggattcc	2640
tgtgtcccc	agtgtataga	tcaacctttt	cggccttctt	tgtcccgaac	taacagcgta	2700
cctaattact	gcaaaaaatg	tgaaggggat	atattcctgg	cagtgtagtc	ctggaagcct	2760
gacgtttgta	ccagctgcac	ctgcattgat	agcgtaatta	gctgtttctc	tgagctctgc	2820
ccttctgtat	cctgtgaaag	acctgtcttg	agaaaaggcc	agtgttgtcc	ctactgcata	2880
aaagacacaa	ttccaaagaa	gggtggtgtc	cacttcagtg	ggaaggccta	tgccgacgag	2940
gagcgggtgg	accttgacag	ctgcacccac	tgtactgtcc	tgcagggcc	gacctctgtc	3000
tcgaccgtca	gctgcccccc	tctgccctgt	gttgagccca	tcaacgtgga	aggaagtgtc	3060
tgccaattgt	gtccagaaat	gtatgtccca	gaaccaacca	atatacccat	tgagaagaca	3120
aaccatcgag	gagagggtga	cctggagggt	cccctgtggc	ccacgcctag	tgaaaatgat	3180
atcgtccatc	tccctagaga	tatgggtcac	ctccaggtag	attacagaga	taacaggctg	3240
caccaagtgt	aagattcttc	actggactcc	attgcctcag	ttgtggttcc	cataattata	3300
tgccctctca	ttataatagc	attcctattc	atcaatcaga	agaaaacagt	gataccactg	3360
cttctcgggt	atcgaacacc	aactaagcct	tcttctttaa	ataatcagct	agtatctgtg	3420
gactgcaaga	aaggaaaccag	agtcagggtg	gacagttccc	agagaatgct	aagaattgca	3480
gaaccagatg	caagattcag	tggcttctac	agcatgcaaa	aacagaacca	tctacaggca	3540
gacaatttct	accaaacagt	gtgaagaaag	gcaactagga	tgaggtttca	aaagacggaa	3600
gacgactaaa	tctgtcttaa	aaagtaaaact	agaatttgtg	cacttgctta	gtggattgta	3660
ttggattgtg	acttgatgta	cacgcgttaag	accttactgg	gatgggctct	gtctacagca	3720
atgtgcagaa	caagcattcc	cctgtttcct	caagataaact	gaccaagtg	tttcttagaa	3780
ccaaagtttt	taaagttgct	aagatatatt	tgccctgtaa	atagctgtag	agatatttgg	3840
gggtggggaca	gtgagtttgg	atggggaaag	gggtgggagg	gtggtgttgg	gaagaaaaat	3900
tggtcagctt	ggctcgggga	gaaacctggt	aacataaaag	cagttcagtg	gcccagaggt	3960
tatttttttc	ctattgtctc	gaagactgca	ctggttgctg	caaagctcag	gcctgaatga	4020
gcaggaacaa	aaaaaggcct	tgcgacccag	ctgccataac	ccactagaa	ctaccagacg	4080
agcacaatcag	aaaaccttgc	cagccatccc	agtgctaaag	caccaagttt	tttctctata	4140
cagtcaacaac	tgcagtaggc	agtgaggaag	ccagagaaat	gcgatagcgg	catttctcta	4200
aagcgggtta	ttaaggatat	atacagttac	actttttgct	gcttttattt	tcttccaagc	4260
caatcaatca	gccagttcct	agcagagtca	gcacatgaac	aagatctaag	tcatttcttg	4320
atgtgagcac	tggagctttt	tttttttaca	acgtgacagg	aagaggaggg	agaggggtgac	4380
gaaccaccag	catttccagg	ggctatatatt	cactgtttgt	tgttgttttg	ttctgttata	4440
ttgttggttg	ttcatagttt	ttgttgaaag				

gactgtttgg ggattctttt tccttattat atactgattc tacaaaaatag aaactacttc 4560  
 attttaattg tatattattc aagcaccttt gttgaagctc aaaaaaatg atgcctcttt 4620  
 aaacttttagc aattatagga gtatttatgt aactatctta tgcttcaaaa aacaaaagta 4680  
 tttgtgtgca tgtgtatata atatatatat atacatatat atttatacac atacaattta 4740  
 tgttttcctg ttgaatgtat ttttatgaga ttttaaccag aacaaaggca gataaacagg 4800  
 cattccatag cagtgccttt gatcacttac aaattttttg aataacacaa aatctcattc 4860  
 tacctgcagt ttaattggaa agatgtgtgt gtgagagtat gtatgtgtgt gtgtgtgtgt 4920  
 gtgtgtgctg gcgcacgcac gccttgagca gtcagcattg cacctgctat ggagaagggt 4980  
 attcctttat taaaatcttc ctcatttgga tttgctttca gttggttttc aatttgctca 5040  
 ctggccagag acattgatgg cagttcttat ctgcatcact aatcagctcc tggatttttt 5100  
 tttttttttt tcaacaatg gtttgaaaca actactggaa tattgtccac aataagctgg 5160  
 aagtttgttg tagtatgcct caaatataac tgactgtata ctatagtggg aacttttcaa 5220  
 acagccctta gcacttttat actaattaac ccatttgctg attgagtttt cttttaaaaa 5280  
 tgcttgctgt gaaagacaca gatacccagt atgcctaacg tgaaaagaaa atgtgttctg 5340  
 ttttgtaaaag gaactttcaa gtattgttgt aaatacttgg acagaggttg ctgaacttta 5400  
 aaaaaaatta atttattatt ataataacct aatttattaa tctgaagatt aaccattttt 5460  
 ttgtcttaga atatacaaaa gaaaaagaaa aaggtgttct agctgtttgc atcaaaggaa 5520  
 aaaaagattt attatcaagg ggcaatatatt ttatcttttc caaaataaat ttgttaatga 5580  
 tacattacaa aaatagattg acatcagcct gattagtata aattttgttg gtaattaatc 5640  
 cattcctggc ataaaaagtc tttatcaaaa aaaattgtag atgcttgctt tttgtttttt 5700  
 caatcatggc catattatga aaatactaac aggatatagg acaaggtgta aattttttta 5760  
 ttattatttt aaagatatga tttatcctga gtgctgtatc tattactctt ttactttggg 5820  
 tcctgttggt ctcttgtaaa agaaaaatat aatttctga agaataaaat agatatatgg 5880  
 cacttgaggt gcatcatagt tctacagttt gtttttggtt tcttcaaaaa agctgtaaga 5940  
 gaattatctg caacttgatt cttggcagga aataaacatt ttgagttgaa atcaaaaaaa 6000  
 aaaaaaaaa a 6011

<210> 35

<211> 1036

<212> PRT

<213> Homo sapiens

<400> 35

Met Tyr Leu Val Ala Gly Asp Arg Gly Leu Ala Gly Cys Gly His Leu  
 1 5 10 15

Leu Val Ser Leu Leu Gly Leu Leu Leu Leu Pro Ala Arg Ser Gly Thr  
 20 25 30

Arg Ala Leu Val Cys Leu Pro Cys Asp Glu Ser Lys Cys Glu Glu Pro  
 35 40 45

Arg Asn Arg Pro Gly Ser Ile Val Gln Gly Val Cys Gly Cys Cys Tyr  
 50 55 60

Thr Cys Ala Ser Gln Gly Asn Glu Ser Cys Gly Gly Thr Phe Gly Ile  
 65 70 75 80

Tyr Gly Thr Cys Asp Arg Gly Leu Arg Cys Val Ile Arg Pro Pro Leu  
 85 90 95

Asn Gly Asp Ser Leu Thr Glu Tyr Glu Ala Gly Val Cys Glu Asp Glu  
 100 105 110

Asn Trp Thr Asp Asp Gln Leu Leu Gly Phe Lys Pro Cys Asn Glu Asn  
 115 120 125

Leu Ile Ala Gly Cys Asn Ile Ile Asn Gly Lys Cys Glu Cys Asn Thr  
 130 135 140  
 Ile Arg Thr Cys Ser Asn Pro Phe Glu Phe Pro Ser Gln Asp Met Cys  
 145 150 155 160  
 Leu Ser Ala Leu Lys Arg Ile Glu Glu Glu Lys Pro Asp Cys Ser Lys  
 165 170 175  
 Ala Arg Cys Glu Val Gln Phe Ser Pro Arg Cys Pro Glu Asp Ser Val  
 180 185 190  
 Leu Ile Glu Gly Tyr Ala Pro Pro Gly Glu Cys Cys Pro Leu Pro Ser  
 195 200 205  
 Arg Cys Val Cys Asn Pro Ala Gly Cys Leu Arg Lys Val Cys Gln Pro  
 210 215 220  
 Gly Asn Leu Asn Ile Leu Val Ser Lys Ala Ser Gly Lys Pro Gly Glu  
 225 230 235 240  
 Cys Cys Asp Leu Tyr Glu Cys Lys Pro Val Phe Gly Val Asp Cys Arg  
 245 250 255  
 Thr Val Glu Cys Pro Thr Val Gln Gln Thr Ala Cys Pro Pro Asp Ser  
 260 265 270  
 Tyr Glu Thr Gln Val Arg Leu Thr Ala Asp Gly Cys Cys Thr Leu Pro  
 275 280 285  
 Thr Arg Cys Glu Cys Leu Ser Gly Leu Cys Gly Phe Pro Val Cys Glu  
 290 295 300  
 Val Gly Ser Thr Pro Arg Ile Val Ser Arg Gly Asp Gly Thr Pro Gly  
 305 310 315 320  
 Lys Cys Cys Asp Val Phe Glu Cys Val Asn Asp Thr Lys Pro Ala Cys  
 325 330 335  
 Val Phe Asn Asn Val Glu Tyr Tyr Asp Gly Asp Met Phe Arg Met Asp  
 340 345 350  
 Asn Cys Arg Phe Cys Arg Cys Gln Gly Gly Val Ala Ile Cys Phe Thr  
 355 360 365  
 Ala Gln Cys Gly Glu Ile Asn Cys Glu Arg Tyr Tyr Val Pro Glu Gly  
 370 375 380  
 Glu Cys Cys Pro Val Cys Glu Asp Pro Val Tyr Pro Phe Asn Asn Pro  
 385 390 395 400  
 Ala Gly Cys Tyr Ala Asn Gly Leu Ile Leu Ala His Gly Asp Arg Trp  
 405 410 415  
 Arg Glu Asp Asp Cys Thr Phe Cys Gln Cys Val Asn Gly Glu Arg His  
 420 425 430

Cys Val Ala Thr Val Cys Gly Gln Thr Cys Thr Asn Pro Val Lys Val  
 435 440 445  
 Pro Gly Glu Cys Cys Pro Val Cys Glu Glu Pro Thr Ile Ile Thr Val  
 450 455 460  
 Asp Pro Pro Ala Cys Gly Glu Leu Ser Asn Cys Thr Leu Thr Arg Lys  
 465 470 475 480  
 Asp Cys Ile Asn Gly Phe Lys Arg Asp His Asn Gly Cys Arg Thr Cys  
 485 490 495  
 Gln Cys Ile Asn Thr Gln Glu Leu Cys Ser Glu Arg Lys Gln Gly Cys  
 500 505 510  
 Thr Leu Asn Cys Pro Phe Gly Phe Leu Thr Asp Ala Gln Asn Cys Glu  
 515 520 525  
 Ile Cys Glu Cys Arg Pro Arg Pro Lys Lys Cys Arg Pro Ile Ile Cys  
 530 535 540  
 Asp Lys Tyr Cys Pro Leu Gly Leu Leu Lys Asn Lys His Gly Cys Asp  
 545 550 555 560  
 Ile Cys Arg Cys Lys Lys Cys Pro Glu Leu Ser Cys Ser Lys Ile Cys  
 565 570 575  
 Pro Leu Gly Phe Gln Gln Asp Ser His Gly Cys Leu Ile Cys Lys Cys  
 580 585 590  
 Arg Glu Ala Ser Ala Ser Ala Gly Pro Pro Ile Leu Ser Gly Thr Cys  
 595 600 605  
 Leu Thr Val Asp Gly His His His Lys Asn Glu Glu Ser Trp His Asp  
 610 615 620  
 Gly Cys Arg Glu Cys Tyr Cys Leu Asn Gly Arg Glu Met Cys Ala Leu  
 625 630 635 640  
 Ile Thr Cys Pro Val Pro Ala Cys Gly Asn Pro Thr Ile His Pro Gly  
 645 650 655  
 Gln Cys Cys Pro Ser Cys Ala Asp Asp Phe Val Val Gln Lys Pro Glu  
 660 665 670  
 Leu Ser Thr Pro Ser Ile Cys His Ala Pro Gly Gly Glu Tyr Phe Val  
 675 680 685  
 Glu Gly Glu Thr Trp Asn Ile Asp Ser Cys Thr Gln Cys Thr Cys His  
 690 695 700  
 Ser Gly Arg Val Leu Cys Glu Thr Glu Val Cys Pro Pro Leu Leu Cys  
 705 710 715 720  
 Gln Asn Pro Ser Arg Thr Gln Asp Ser Cys Cys Pro Gln Cys Thr Asp  
 725 730 735

Gln Pro Phe Arg Pro Ser Leu Ser Arg Asn Asn Ser Val Pro Asn Tyr  
 740 745 750  
 Cys Lys Asn Asp Glu Gly Asp Ile Phe Leu Ala Ala Glu Ser Trp Lys  
 755 760 765  
 Pro Asp Val Cys Thr Ser Cys Ile Cys Ile Asp Ser Val Ile Ser Cys  
 770 775 780  
 Phe Ser Glu Ser Cys Pro Ser Val Ser Cys Glu Arg Pro Val Leu Arg  
 785 790 795 800  
 Lys Gly Gln Cys Cys Pro Tyr Cys Ile Lys Asp Thr Ile Pro Lys Lys  
 805 810 815  
 Val Val Cys His Phe Ser Gly Lys Ala Tyr Ala Asp Glu Glu Arg Trp  
 820 825 830  
 Asp Leu Asp Ser Cys Thr His Cys Tyr Cys Leu Gln Gly Gln Thr Leu  
 835 840 845  
 Cys Ser Thr Val Ser Cys Pro Pro Leu Pro Cys Val Glu Pro Ile Asn  
 850 855 860  
 Val Glu Gly Ser Cys Cys Pro Met Cys Pro Glu Met Tyr Val Pro Glu  
 865 870 875 880  
 Pro Thr Asn Ile Pro Ile Glu Lys Thr Asn His Arg Gly Glu Val Asp  
 885 890 895  
 Leu Glu Val Pro Leu Trp Pro Thr Pro Ser Glu Asn Asp Ile Val His  
 900 905 910  
 Leu Pro Arg Asp Met Gly His Leu Gln Val Asp Tyr Arg Asp Asn Arg  
 915 920 925  
 Leu His Pro Ser Glu Asp Ser Ser Leu Asp Ser Ile Ala Ser Val Val  
 930 935 940  
 Val Pro Ile Ile Ile Cys Leu Ser Ile Ile Ile Ala Phe Leu Phe Ile  
 945 950 955 960  
 Asn Gln Lys Lys Gln Trp Ile Pro Leu Leu Cys Trp Tyr Arg Thr Pro  
 965 970 975  
 Thr Lys Pro Ser Ser Leu Asn Asn Gln Leu Val Ser Val Asp Cys Lys  
 980 985 990  
 Lys Gly Thr Arg Val Gln Val Asp Ser Ser Gln Arg Met Leu Arg Ile  
 995 1000 1005  
 Ala Glu Pro Asp Ala Arg Phe Ser Gly Phe Tyr Ser Met Gln Lys Gln  
 1010 1015 1020  
 Asn His Leu Gln Ala Asp Asn Phe Tyr Gln Thr Val  
 1025 1030 1035



<210> 36  
 <211> 716  
 <212> DNA  
 <213> Homo sapiens

<400> 36  
 gcagtacctg gagggtcctg cagggggaaa gcgaaccggg ccctgaagtc cggggcagtc 60  
 acccggggct cctggggcgc tctggccggg tggggctgag cagcgatcct gctttgtccc 120  
 agaagtcag agggatcagc cccagaacac accctcctcc ccgggacgcc gcagctttct 180  
 ggaggctgag gaaggcatga agagtgggct ccacctgctg gccgactgag aaaagaattt 240  
 ccagaactcg gtcctatttt acagattgag aaactatggg tcaagaagag aggacggggc 300  
 ttgagggaat ctctgattc tcttatatg acctcaaact gaccatacta aacagtgtag 360  
 aaggctcttt taaggctcta aatgtcaggg tctcccatcc cctgatgcct gacttgtaca 420  
 gtcagtgtgg agtagacggt ttctccacc caggggtgac tcagggggat gatctgggtc 480  
 ccattctggg cttaagaccc caaacaaggg ttttttcagc tccaggatct ggagcctcta 540  
 tctgggttag gtcgtaacct ctgtgtgcct cccgttacc catctgtcca gtgagctcag 600  
 ccccatcca cctaacaggg tggccacagg gattactgag ggtaagacc ttagaactgg 660  
 gtctagcacc cgataagagc tcaataaatg ttgttccttt ccacatcaaa aaaaaa 716

<210> 37  
 <211> 395  
 <212> DNA  
 <213> Homo sapiens

<400> 37  
 ccaatacttc attcttcatt ggtggagaag attgtagact tctaagcatt ttccaaataa 60  
 aaaagctatg atttgatttc caacttttaa acattgcatg tcctttgcca ttactacat 120  
 tctccaaaaa aaccttgaaa tgaagaaggc cacccttaaa atacttcaga ggctgaaaat 180  
 atgattatta cattggaatc ctttagccta tgtgatattt ctttaacttt gcactttcac 240  
 gccaggtaaa accaaagtca gggtaaccac tgctatttta caaatgtta aaacccta 300  
 tgcagttcct tttttaaat attttaaaga ttacttaaca acattagaca gtgcaaaaaa 360  
 agaagcaagg aaagcattct taattctacc atcct 395

<210> 38  
 <211> 134  
 <212> DNA  
 <213> Homo sapiens

<400> 38  
 ccctcgagcg gccgcccggg cagggtacttt taccacggaa ttgttcaact gactttaaga 60  
 aaccataaaa gctgcctggc tttcagcaac aggctatca acaccatggt gactctccat 120  
 aaggacacc gtgt 134

<210> 39  
 <211> 644  
 <212> DNA  
 <213> Homo sapiens

<400> 39  
 aagcctgttg tcatggggga ggtgggtggcg cttgggtggcc actggcgggc gaggtagagg 60  
 cagtggcgct tgagttggtc gggggcagcg gcagatttga ggcttaagca acttcttccg 120  
 gggaagagtg ccagtgcagc cactgttaca attcaagatc ttgatctata tccatagatt 180  
 ggaatatttg tgggcccagc atcctcagac gcctcactta ggacaaatga ggaaactgag 240  
 gcttgggtgaa gttacgaaac ttgtccaaaa tcacacaact tgtaaagggc acagccaaga 300  
 ttcagagcca ggctgtaaaa attaaaatga acaaattacg gcaaagtttt aggagaaaga 360  
 aggatgttta tggtccagag gccagtcgct cacatcagtg gcagacagat gaagaaggcg 420  
 ttcgaccggg aaaatgtagc ttcccgggta agtaccttgg ccatgtagaa gttgatgaat 480  
 caagaggaat gcacatctgt gaagatgctg taaaaagatt gaaagctgaa aggaagtctt 540

tcaaaggctt ctttggaaaa actggaaaga aagcagttaa agcagtttct gtgggtctaa 600  
gcagatggac tcagaggttg tggatgaaaa actaaggacc tcat 644

<210> 40

<211> 657

<212> DNA

<213> Homo sapiens

<400> 40

ctttttgttt gggttttcca atgtagatgt ctcagtga aa tgtgcagata tactttgttc 60  
cttatatggg caccagtgtt aattatggac aaatacatta aaacaagggt tcctggcca 120  
gcctcccatc taatctcttt gatactcttg gaactcaagt ctgaggagcg atttctgaat 180  
tagccagtgt tgtaccaact ttctgttagg aattgtatta gaataacctt tctttttcag 240  
acctgctcag tgagacatct tggggaatga agtaggaaaa tagacatttg gtggaaaaaac 300  
agcaaaatga gaacattaaa aagactcatt caagtatgag tataaagggc atggaaattc 360  
tggtcctttg agcaaaatga gaagaaaaaa ttctgctcag cagtattcac tgtgttaaga 420  
ttttttgttt tttacacgaa tggaaaaatg atgtgtaagt ggtatagatt ttaatcagct 480  
aacagtcact ccagagattt tgatcagcac caattcctat agtagtaagt atttaaaagt 540  
taagaaatac tactacattt aacattataa agtagagttc tggacataac tgaaaattag 600  
atgtttgtct caatagaat ttgttccac ttgtattttc aacaaaatta tcggaac 657

<210> 41

<211> 1328

<212> DNA

<213> Homo sapiens

<400> 41

acaattttta aataactagc aattaatcac agcatatcag gaaaaagtag acagtgagtt 60  
ctggttagtt tttgtaggct cattatgggt agggctggtt agatgtatat aagaacctac 120  
ctatcatgct gtatgtatca ctcattccat ttccatgttc catgcatact cgggcatcat 180  
gctaatatgt atccttttaa gcactctcaa ggaaacaaaa gggcctttta tttttataaa 240  
ggtaaaaaaa attcccaaaa tattttgcac tgaatgtacc aaaggtgaag ggacattaca 300  
atatgactaa cagcaactcc atcacttgag aagtataata gaaaatagct tctaaatcaa 360  
acttccctca cagtgcctgt tctaccacta caaggactgt gcactcaagt aataattttt 420  
taagattcac tatatgtgat agtatgatat gcattttattt aaaatgcatt agactctctt 480  
ccatccatca aatactttac aggatggcat ttaatacaga tatttcgtat ttccccact 540  
gctttttatt tgtacagcat cattaaacac taagctcagt taaggagcca tcagcaacac 600  
tgaagagatc agtagtaaga attccatttt ccctcatcag tgaagacacc acaaattgaa 660  
actcagaact atattttctaa gcctgcattt tcaactgatgc ataattttct tagtaatat 720  
aagagacagt ttttctatgg catctccaaa actgcatgac atcactagtc ttacttctgc 780  
ttaattttat gagaaggat tcttcatttt aattgctttt gggattactc cacatctttg 840  
tttatttctt gactaatcag attttcaata gagtgaagtt aaattggggg tcataaaaagc 900  
attggattga catatggttt gccagcctat gggtttacag gcattgcccc aacatttctt 960  
tgagatctat atttataagc agccatggaa ttccctattat gggatgttgg caatcttaca 1020  
ttttatagag gtcatatgca tagttttcat aggtgttttg taagaactga ttgctctcct 1080  
gtgagtttaag ctatgtttac tactgggacc ctcaagagga ataccactta tgttacactc 1140  
ctgcactaaa ggcacgtact gcagtgtgaa gaaatgttct gaaaaagggt tatagaaatc 1200  
tggaataaag aaagggaag ctctctgtat tctataattg gaagagaaaa aaagaaaaac 1260  
ttttaactgg aaatgttagt ttgtacttat tgatcatgaa tacaagtata tatttaattt 1320  
tgaaaaaa 1328

<210> 42

<211> 987

<212> DNA

<213> Homo sapiens

<400> 42

aacagagact ggcacaggac ctcttcattg caggaagatg gtagttagg caggtaacat 60

```

tgagctcttt tcaaaaaagg agagctcttc ttcaagataa ggaagtggta gttatgggtg 120
taacccccgg ctatcagtec ggatgggtgc caccctccct gctgtaggat ggaagcagcc 180
atggagtggg agggaggcgc aataagacac ccctccacag agcttggcat catgggaagc 240
tggttctacc tcttctggc tctttgttt aaaggcctgg ctgggagcct tccttttggg 300
tgtctttctc ttctccaacc aacagaaaag actgctcttc aaagggtggag ggtcttcatg 360
aaacacagct gccaggagcc caggcacagg gctgggggcc tggaaaaagg agggcacaca 420
ggaggaggga ggagctggta gggagatgct ggctttacct aaggctctga aacaaggagg 480
gcagaatagg cagaggcctc tccgtcccag gccattttt gacagatggc gggacgga 540
tgcaatagac cagcctgcaa gaaagacatg tgttttgatg acaggcagtg tggccgggtg 600
gaacaagcac aggccttgga atccaatgga ctgaatcaga accctaggcc tgccatctgt 660
cagccgggtg acctgggtca attttagcct ctaaaagcct cagtctcctt atctgcaaaa 720
tgaggcttgt gatacctgtt ttgaagggtt gctgagaaaa ttaaagataa ggggtatcaa 780
aatagtctac ggccatacca cctgaacgt gcctaatctc gtaagctaag cagggtcagg 840
cctggttagt acctggatgg ggagagtatg gaaaacatac ctgcccgcag ttggagttag 900
actctgtctt aacagtagcg tggcacacag aaggcactca gtaaatactt gttgaataaa 960
tgaagtagcg atttggtgtg aaaaaaa 987

```

<210> 43

<211> 956

<212> DNA

<213> Homo sapiens

<400> 43

```

cggacgggtg ggcggacgcg tgggtgcagg agcaggcgcg ctgccgactg ccccaaccaa 60
ggaaggagcc cctgagtcgg cctgcgcctc catccatctg tccggccaga gccggcatcc 120
ttgcctgtct aaagccttaa ctaagactcc cgccccgggc tggccctgtg cagaccttac 180
tcaggggatg tttacctggt gctcgggaag ggaggggag gggccgggga gggggcacgg 240
caggcgtgtg gcagccacac gcaggcggcc agggcggcca gggacccaaa gcaggatgac 300
cacgcacctc cagccactgc cctccccga atgcatttgg aaccaaaagc taaactgagc 360
tcgcagcccc cgcgcctcc ctcgcctcc catcccgtt agcgtctctg acagatggac 420
gcaggccctg tccagcccc agtgcgctcg ttccggctcc cacagactgc cccagccaac 480
gagattgctg gaaaccaagt caggccaggt gggcggacaa aagggccagg tgcggcctgg 540
ggggaacgga tgctccgagg actggactgt ttttttcaca catcgttgcc gcagcgggtg 600
gaaggaaaagg cagatgtaaa tgatgtgttg gtttacaggg tatatttttg ataccttcaa 660
tgaattaatt cagatgtttt acgcaaggaa ggacttacc agtattactg ctgctgtgct 720
tttgatctct gcttaccgtt caagaggcgt gtgcaggccg acagtcgggt accccatcac 780
tcgcaggacc aagggggcgg ggactgctgg ctcacgcccc gctgtgtcct cctccccctc 840
ccttccttgg gcagaatgaa ttogatgcgt attctgtggc cgccatctgc gcagggtgg 900
ggtattctgt catttacaca cgtcgttcta attaaaaagc gaattatact ccaaaa 956

```

<210> 44

<211> 536

<212> DNA

<213> Homo sapiens

<400> 44

```

aaataaacac ttccataaca ttttgttttc gaagtctatt aatgcaatcc cacttttttc 60
cccctagttt ctaaatgtta aagagagggg aaaaaaggct caggatagtt ttcacctcac 120
agtgttagct gtcttttatt ttactcttgg aaatagagac tccattaggg ttttgacatt 180
ttgggaaccc agttttacca ttgtgtcagt aaaacaataa gatagtttga gagcatatga 240
tctaaataaa gacatttgaa ggggttagtt gaattctaaa agtaggtaat agccaaatag 300
cattctcatc ccttaacaga caaaaactta tttgtcaaaa gaattagaaa aggtgaaaat 360
attttttcca gatgaaactt gtgccacttc caattgacta atgaaatata aggagacaga 420
ctggaaaaag tgggttatgc caccttttaa accctttctg gtaaatatta tggtagctaa 480
agggtggttt ccccggcacc tggacctgga caggtagggg tccgtgggta accagt 536

```

<210> 45

<211> 1630

<212> DNA  
<213> Homo sapiens

<400> 45

```

ggggaggggac gagtatggaa ccctgaaggt agcaagtcca ggcactggcc tgaccatccg 60
gctccctggg caccaagtcc caggcaggag cagctgtttt ccatcccttc ccagacaagc 120
tctattttta tcacaatgac ctttagagag gtctcccagg ccagctcaag gtgtcccact 180
atccccctcg gagggaagag gcaggaaaaat tctccccggg tccctgtcat gctactttct 240
ccatcccagt tcagactgtc caggacatct tatctgcagc cataagagaa ttataaggca 300
gtgattttcc ttaggcccag gacttgggcc tccagctcat ctgttccttc tgggcccatt 360
catggcaggt tctgggctca aagctgaact ggggagagaa gagatacaga gctaccatgt 420
gactttacct gattgccctc agtttggggt tgcttattgg gaaagagaga gacaaagagt 480
tacttgttac gggaaatatg aaaagcatgg ccaggatgca tagaggagat tctagcaggg 540
gacaggattg gctcagatga cccctgaggg ctcttccagt cttgaaatgc attccatgat 600
attaggaagt cgggggtggg tgggtgggtgg gggctagtgt gggttgaatt taggggccga 660
tgagcttggg tacgtgagca ggggtgttaag ttagggtctg cctgtatttc tgggtcccctt 720
ggaaatgtcc ccttcttcag tgtcagacct cagtcccagt gtccatatac tgcccagaaa 780
agtagacatt atcctgcccc atcccttccc cagtgcactc tgacctagct agtgcctggg 840
gcccagtgac ctgggggagc ctgggtgcag gccctcactg gttccctaaa ccttgggtggc 900
tgtgattcag gtccccaggg gggactcagg gaggaatatg gctgagttct gtagtttcca 960
gagttggctg gtagagcctt ctagagggttc agaataatag cttcaggatc agctgggggt 1020
atggaattgg ctgaggatca aacgtatgta ggtgaaagga taccaggatg ttgctaaagg 1080
tgagggacag tttgggtttg ggacttacca gggatgagtt agatctggaa cccccaagtg 1140
aggctggagg gagttaaggt cagtatggaa gatagggttg ggacagggtg ctttggaatg 1200
aaagagtgac cttagagggc tccttggggc tcaggaatgc tcctgctgct gtgaagatga 1260
gaaggtgctc ttactcagtt aatgatgagt gactatattt accaaagccc ctacctgctg 1320
ctgggtccct tgtagcacag gagactgggg ctaagggccc ctcccaggga agggacacca 1380
tcaggcctct ggctgaggga gtagcataga ggatccattt ctacctgcat ttcccagagg 1440
actagcagga ggcagccttg agaaaccggc agttcccaag ccagcgctg getgttctct 1500
cattgtcact gccctctccc caacctctcc tctaaccac tagagattgc ctgtgtcctg 1560
cctcttgctt cttgtagaat gcagctctgg ccctcaataa atgttcctg cattcatctg 1620
caaaaaaaaaa                                     1630

```

<210> 46  
<211> 169  
<212> DNA  
<213> Homo sapiens

<400> 46

```

tcttttgctt tttagctttt atttttgtat taacaggagt cttattacac atagggttga 60
taaaactggg ttatgatctt cagtctgatt ccagtgtgct ataactagat aacgtatgaa 120
ggaaaaacga cgacgaacaa aaaagtaagt gcttgggaaga cttagtga 169

```

<210> 47  
<211> 769  
<212> DNA  
<213> Homo sapiens

<400> 47

```

tgcaggtcat atttactatc ggcaataaaa ggaagcaaag cagtattaag cagcgggtga 60
atttgtcgct ttcacttttt ataaagtgtc acataaaaat tcatatttcc aaatttataa 120
acataactcc agttcttacc atgagaacag catggtgatc acgaaggatc ttcttgaaaa 180
aaacaaaaac aaaaacaaaa aacaatgatc tcttctgggt atcacatcaa atgagataca 240
aaggtgtact aggcaatctt agagatctgg caacttattt tatatataag gcatctgtga 300
ccaagagacg ttatgaatta aatgtacaaa tgtattatgt ataaatgtat taaatgcaag 360
cttcatataa tgacaccaat gtctctaagt tgctcagaga tcttgactgg ctgtggccct 420
ggccagctcc tttcctgata gtctgattct gccttcatat ataggcagct cctgatcatc 480
catgccagtg aatgagaaaa caagcatgga atatataaac tttaacatta aaaaatgttt 540

```

tat t t t t g t a a   t a a a a t c a a a   t t t c c c a t t g   a a a c c t t c a a   a a a c t t t g c a   g a a t g a g g t t   600  
 t t g a t a t a t g   t g t a c a a g t a   g t a c c t t c t t   a g t g c a a g a a   a a c a t c a t t a   t t t c t g t c t g   660  
 c c t g c c t t t t   t g t t t t t a a a   a a t g a a g a c t   a t c a t t g a a a   c a a g t t t g t c   t t c a g t a t c a   720  
 g g a c a t g t t g   a c g g a g a g g a   a a g g t a g g a a   a g g g t t a g g g   a t a g a a g c c   769

<210> 48

<211> 2529

<212> DNA

<213> Homo sapiens

<400> 48

t t t a g t t c a t   a g t a a t g t a a   a a c c a t t t g t   t t a a t t c t a a   a t c a a a t c a c   t t t c a c a a c a   60  
 g t g a a a a t t a   g t g a c t g g t t   a a g g t g t g c c   a c t g t a c a t a   t c a t c a t t t t   c t g a c t g g g g   120  
 t c a g g a c c t g   g t c c t a g t c c   a c a a g g g t g g   c a g g a g g a g g   g t g g a g g c t a   a g a a c a c a g a   180  
 a a a c a c a c a a   a a g a a a g g a a   a g c t g c c t t g   g c a g a a g g a t   g a g g t g g t g a   g c t t g c c g a g   240  
 g g a t g g t g g g   a a g g g g g c t c   c c t g t t g g g g   c c g a g c c a g g   a g t c c c a a g t   c a g c t c t c c t   300  
 g c c t t a c t t a   g t c c t g g c a   g a g g g t g a g t   g g g g a c c t a c   g a g g t t c a a a   a t c a a a t g g c   360  
 a t t t g g c c a g   c c t g g c t t t a   c t a a c a g g t t   c c c a g a g t g c   c t c t g t t g g c   t g a g c t c t c c   420  
 t g g g c t c a c t   c c a t t t c a t t   g a a g a g t c c a   a a t g a t t c a t   t t t c c t a c c c   a c a a c t t t t c   480  
 a t t a t t c t t c   t g g a a a c c c a   t t t c t g t t g a   g t c c a t c t g a   c t t a a g t c c t   c t c t c c c t c c   540  
 a c t a g t t g g g   g c c a c t g c a c   t g a g g g g g g t   c c c a c c a a t t   c t c t c t a g a g   a a g a g a c a c t   600  
 c c a g a g g c c c   c t g c a a c t t t   g c g g a t t t c c   a g a a g g t g a t   a a a a a g a g c a   c t c t t g a g t g   660  
 g g t g c c c a g g   a a t g t t t a a a   a t c t a t c a g g   c a c a c t a t a a   a g c t g g t g g t   t t c t t c c t a c   720  
 c a a g t g g a t t   c g g c a t a t g a   a c c a c c t a c t   c a a t a c t t t a   t a t t t t g t c t   g t t t a a a c a c   780  
 t g a a c t c t g g   t g t t g a c a g g   t a c a a a g g a g   a a g a g a t g g g   g a c t g t g a a g   a g g g g a g g g c   840  
 t t c c c t c a t c   t t c c t c a a g a   t c t t t g t t t c   c a t a a a c t a t   g c a g t c a t a a   t t g a g a a a a a   900  
 g c a a t a g a t g   g g g c t t c c t a   c c a t t t g t t g   g t t a t t g c t g   g g g t t a g c c a   g g a g c a g t g t   960  
 g g a t g g c a a a   g t a g g a g a g a   g g c c c a g a g g   a a a g c c c a t c   t c c c t c c a g c   t t t g g g g t c t   1020  
 c c a g a a a g a g   g c t g g a t t t c   t g g g a t g a a g   c c t a g a a g g c   a g a g c a a g a a   c t g t t c c a c c   1080  
 a g g t g a a c a g   t c c t a c c t g c   t t g g t a c c a t   a g t c c c t c a a   t a a g a t t c a g   a g g a a g a a g c   1140  
 t t a t g a a a c t   g a a a a t c a a a   t c a a g g t a t t   g g g a a g a a t a   a t t t c c c c t c   g a t t c c a c a g   1200  
 g a g g g a a g a c   c a c a c a a t a t   c a t t g t g c t g   g g g c t c c c c a   a g g c c c t g c c   a c c t g g c t t t   1260  
 a c a a a t c a t c   a g g g g t t g c c   t g c t t g g c a g   t c a c a t g c t t   c c c t g g t t t t   a g c a c a c a t a   1320  
 c a a g g a g t t t   t c a g g g a a c t   c t a t c a a g c c   a t a c c a a a a t   c a g g g t c a c a   t g t g g g t t t c   1380  
 c c c t t t c c t t   g c c t c t t c a t   a a a a g a c a a c   t t g g c t t c t g   a g g a t g g t g g   t c t t t t g c a t   1440  
 g c a g t t g g g c   t g a c c t g a c a   a a g c c c c a g   t t t c c t g t g g   c a g g t t c t g g   g a g a g g a t g c   1500  
 a t t c a a g t t c   c t g c a g c c t a   g g g g a c a g g g   c t g c t t g t t c   a g t t a t t a c t   g c c t c g g a g c   1560  
 t c c a a a t c c c   a c c a a a g t c c   t g a c t c c a g g   t c t t t c c t a a   t g c a c a g t a g   t c a g t c t c a g   1620  
 c t t c g g c a g t   a t t c t c g g c t   g t a t g t t c t c   t g g c a g a g a g   a g g c a g a t g a   a c a t a g t t t t   1680  
 a g g g a g a a a g   c t g a t g g g a a   a c c t g t g a g t   t a a g c c a c a t   g t c t c a c c a g   g a t a a t t t a   1740  
 t g c c a g g a a a   c c a g g a a g t c   a t t c a a g t t g   t t c t c t g a g g   c c a a a g a c a c   t g a g c a c a g c   1800  
 c c a g a g c c a a   t a a a a g a t c t   t t g a g t c t c t   g g t g a a t t c a   c g a a g t g a c c   c c a g c t t t a g   1860  
 c t a c t g c a a t   t a t g a t t t t t   a t g g g a c a g c   a a t t t c t t g c   a t c t c t a c a g   a g g a a g a a g a   1920  
 g g g g g a g t g g   g a g g g g a a g g   a a a g a g a a c a   g a g c g g c a c t   g g g a t t t g a a   a g g g g a a c c t   1980  
 c t c t a t c t g a   g g a g c c c c c a   c t g g c t t c a g   a a g c a a c t t a   c c a a g g g g t a   t t t a a a g a c a   2040  
 t g a a a a t t t c   c a g a a a t a c c   a t t t g g t g c a   t c c c t t t g t t   t c t g t a a t a t   t a a a c t c a g g   2100  
 t g a a a t t a t a   c t c t g a c a g t   t t c t c t c t t t   c t g c c t c t t c   c c t c t g c a g a   g t c a g g a c c t   2160  
 g c a g a a c t g g   c t g a a a c a a g   a t t t c a t g g t   g t c a c c c a t g   a g a g a t g a c t   c a a t g c c a a g   2220  
 g c c t g a a g t t   a t a g a g t g t t   t a c a g c g g t g   g c g a t a t t c a   g g g g t c a t c g   c c a a c t g g t c   2280  
 t c g a g t t c c a   a a g c t c t g a t   g a a g a a a c a a   g a c t c c t t g a   t g t g t t a c t g   a t c c c a c t g a   2340  
 t t c c a g g a g t   c a a g a t t a g c   c a g g a a g c c a   a a c a c c a g g a   g t t g g g g t g g   c a c g t c a c c a   2400  
 g t c c a g a g c c   c t g c c a c g g a   t g t a c g c a g g   a g c c c a g c a t   t a g g c a a t c a   g g a g c c a g a a   2460  
 c a t g a t c a c c   a g g g c c a c a a   a t a g g a a g a g   g c g t g a c a g g   a a c t g c t c g t   c c a c a t a c c t   2520  
 g g g g t g t c c   2529

<210> 49

<211> 1552

<212> DNA  
<213> Homo sapiens

<400> 49

```

tttttttttt tttttgattt ctgggacaat taagctttat ttttcatata tatatatatt 60
ttcatatata tatatacata catatataaa ggaaacaatt tgcaaattta cacacctgac 120
aaaaccatat atacacacat atgtatgcat acacacagac agacacacac acccgaagct 180
ctagccaggc ccgtttttcca tccctaagta ccattctctc atttgggccc ttctaggggt 240
ggggccctga gcttgggttg tagaagtttg gtgctaatat aaccatagct ttaatcccca 300
tgaaggacag tgtagacctc atctttgtct gctcccgcgt gcctttcagt tttacgtgat 360
ccatcaagag ggctatggga gccaaagtga acgggggat tgaggctaatt tcacctgaac 420
tcgaaaacag cgcccagctt cctcacccga ggcacgcgtc ttttcttttt ttttctctga 480
gacggagtct cgctgtgttg ccagggctgg agtgcagtgg cacggctctg gctcactgca 540
agctccacct cctggattca taccattctc ctgcttcagc cttccgagta gctgggacta 600
taggtgcaa ccactacgcc tagctaattt tttttgtat ttttagtaga gacagggttt 660
caccgtgtta gccaggatgg tctcgtcctg actttgtgat ccgccgcct cggcctccca 720
aagtgtctgg attacaggcg tgagccacca cacctggccc cggcacgtat cttttaagga 780
atgacaccag ttcttggtt ctgaccaaag aaaaaatgtc acaggagact ttgaagaggc 840
agacaggagg gtggtggcag caacactgca gctgcttctg gatgctgctg ggggtgctctc 900
cggagcgggt gtgaacagcg cacttcaaca tgagcaggcg cctggctccg gtgtgtcctc 960
acttcagtgg tgcacctgga tgggtgaagc cagcctttgg ggcaggaaac cagctcagag 1020
aggctacca gctcagctgc tggcaggagc caggtattta cagccataat gtgtgtaaag 1080
aaaaaacacg ttctgcaaga aactctccta ccgctcggg agactggggc tccttgcttg 1140
ggatgagctt cactcaacgt ggagatgggt gtggactggt ccctgaaaag cgggccttgc 1200
agggccaagt gaggtcctca ggtcctaacc cagtggccct ctgaaagggg gtgtgcaggc 1260
gaggggagca ggaggtctct ctctagtcct tttggaggct ttggctgaga gaagagttag 1320
cagggagctg ggaatggtcc aggcagggaa gggagctgaa gtgattcggg gctaattgct 1380
cagatcgatg tatttctctc cctggctctc cggagccctc ttgtcaccgc tgetgccttg 1440
caggaggccc atctctctg ggagcttata tgacttaact tcaactacaa gttegcctct 1500
acgagaccgg gggtagcgtg atctcctgct tccctgagcg cctgcacggc ag 1552

```

<210> 50  
<211> 921  
<212> DNA  
<213> Homo sapiens

<400> 50

```

ctgtgggtccc agctactcag gaggtgagg cgggaggatt gcttgagccc aggagttgga 60
tggtgcagtg agccaagatc gcaccattgc cctccactct gggccacgga gcaataacct 120
gtctcagaaa acaacaaca aaaagcagaa acgctgaagg ggtcgggtca cgggaaaacc 180
gectgtcaga acacttggtt actcctaccc cagatcagtg gacctgggaa tgagggttgg 240
tcccgggagg cttttctcca agctgttgcc accagacccg ccatgggaac cctggccaca 300
gaagcctccc ggggagttag ccagagcctg gaccgctgtg ctgatgtgtc tggggtggag 360
ggaggggtgg gagtgtgcaa ggggtgtgtg gtgccgggg ggtgttcatg ggcaagcatg 420
tgctgtcctg tgtgtgtgctg tgcctctccc ctgcagccgt cgggtggtatc tccctccagc 480
cccttcgcca ccttctgagc attgtctgtc cacgtgagac tgcccagaga cagcagagct 540
ccacgtgggt ttaaggggag acctttccct ggacctgggg gtctcgcgt atctcatgac 600
caggtgctaa atgacccgac atgcataacc tgcctttcga tgaccaacct cctgtcccc 660
gtcccgtga cctgcccccg tggcgtctca cgggtgatgcc tgctcctgac attgggtgtt 720
actgtagcaa actacattct ggatgggaat tttcatgtac atgtgtggca tgtggaaaat 780
ttcaaataaa atggacttga tttagaaagc caaaaagctg tgtggtcctt ccagcacgga 840
tactttgacc tcttgccctac aaccccttcc ttgggtccga ggctggtagc tttgttcaact 900
tcagatgggt gggggcgggt g

```

<210> 51  
<211> 338  
<212> DNA  
<213> Homo sapiens

<400> 51  
 atgatctatc tagatgccct accgtaaaat caaaacacaa aaccctactg actcattccc 60  
 tcccttccag atattacccc atttctctac ttcccatgtt agccaaactt tccaaaaatt 120  
 catgtttctgt cttcattttcc tcatgttcaa cccaccctgt cttagctacc acccctcagt 180  
 aacgacctag cctgggtaga aacaaatgtc agcatgatac catactcaat gatccttcgt 240  
 cactgttgctc attgtcatca ttccatggcc ttactttccc tctcagcgcc atttgctaca 300  
 gtaagaaact ttctttcttg aattcttggg tctcttgg 338

<210> 52  
 <211> 1191  
 <212> DNA  
 <213> Homo sapiens

<400> 52  
 ctagcaagca ggtaaaccag ctttgtacaa acacacacag accaacacat cgggggatgg 60  
 ctgtgtgttg ctagagcaga ggctgattaa acactcagtg tgttggctct ctgtgccact 120  
 cctggaaaat aatgaattgg gtaaggaaca gtaataaga aaatgtgcct tgctaactgt 180  
 gcacattaca acaaagagct ggcagctcct gaaggaaaag ggcttgtgcc gctgccgttc 240  
 aaacttgtca gtcaactcat gccagcagcc tcagcgtctg cctccccagc acaccctcat 300  
 tacatgtgtc tgtctggcct gatctgtgca tctgctcgga gacgctcctg acaagtcggg 360  
 aatttctcta tttctccact ggtgcaaaga gcgattttct cctgcttctt cttctgtcac 420  
 ccccgctcct ctccccagg aggcctcctg atttatggta gctttggact tgcttccccg 480  
 tctgactgtc cttgactttct agaatggaag aagctgagct ggtgaaggga agactccagg 540  
 ccatcacaga taaaagaaaa atacaggaag aaatctcaca gaagcgtctg aaaatagagg 600  
 aagacaaaact aaagcaccag catttgaaga aaaaggcctt gagggagaaa tggcttctag 660  
 atggaatcag cagcggaaaa gaacaggaag agatgaagaa gcaaaatcaa caagaccagc 720  
 accagatcca ggttctagaa caaagtatcc tcaggcttga gaaagagatc caagatcttg 780  
 aaaaagctga actgcaaatc tcaacgaagg aagaggccat tttaaagaaa ctaaagtcaa 840  
 ttgagcggac aacagaagac attataagat ctgtgaaagt ggaaagagaa gaaagagcag 900  
 aagagtcaat tgaggacatc tatgctaata tccctgacct tccaaagtcc tacatacctt 960  
 ctaggttaag gaaggagata aatgaagaaa aagaagatga tgaacaaaat aggaaagctt 1020  
 tatatgccat ggaaattaaa gttgaaaaag acttgaagac tggagaaaag acagttctgt 1080  
 cttccaatac ctctggccat cagatgactt taaaaggtag aggagtaaaa gtttaagatg 1140  
 atgggcaaaa gtccagtgtg ttcagtaaaag tgtaaatcac aagttggagg t 1191

<210> 53  
 <211> 1200  
 <212> DNA  
 <213> Homo sapiens

<400> 53  
 aacagggact ctactctat caaccccagg ctggagtcgg gtgcgcccac cctggctccc 60  
 tgcaacctcc gcctcccagg ctcaagcaac tctcctgcct cagtcgctct agtagctggg 120  
 actacaggca cacaccacca tgcccagcca atttttgcct tttttgtaga gacagggttt 180  
 cgcttctgt ccaggccggc atcatatact ttaaatacatg ccagatgac ttaataacct 240  
 aatacaatat atcaggttgg tttaaaaata attgctttttt tattattttt gcatttttgc 300  
 accaacctta atgctatgta aatagttgtt atactgttgc ttaacaacag tatgacaatt 360  
 ttggcttttt ctttgtatta ttttgtattt ttttttttta ttgtgtgggc tttttttttt 420  
 ttctcagtgt tttcaattcc tcttgggttg aatccatgga tgcaaaaccc acagatatga 480  
 agggctggct atatatgcat tgatgattgt cctattatat tagttataaa gtgtcattta 540  
 atatgtagt aaagttatgg tacagtggaa agagtgttg aaaacataaa catttggacc 600  
 tttcaagaaa ggtagcttgg tgaagttttt cacttcaaaa ctatgtccca gtcagggtc 660  
 tgctactaat tagctataat ctttgcacaa attacatcac ctttgagctc cagttgcctc 720  
 acctgtaaaa tgaaagaact ggatactctc taaggctact tccagccctg tcattctata 780  
 actctgttat gctgaggaag aaattcacat tgtgttaact gtatgagtoa aactgaaaat 840  
 gattattaaa gtgggaaaaa gccaatgtct tctcttagaa agctcaacta aatttgagaa 900  
 gaataatctt ttcaattttt taagaattta aatattttta agggtttgac ctatttattt 960

```

agagatgggg tctcactctg tcacccagac tggagtagac tggcacaatc atagctcact 1020
gctgcctcaa attcatgggc tcaagtgate ctcttgcttc tgcctccaga gtagctgcga 1080
ctatgggcat gtgccaccac gcctggctaa catttgattt gacctattta tttattgtga 1140
tttatacttt tttttttttt tctttttttt ttttttacia aatcagaaat acttattttg 1200

```

&lt;210&gt; 54

&lt;211&gt; 989

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 54

```

aagccaccac tcaaaacttc ctatacattt tcacagcaga gacaagtgaa cattttatttt 60
tatgcctttc ttctatgtg tatttcaagt ctttttcaaa acaaggcccc aggactctcc 120
gattcaatta gtccctgggc tggtcgactg tgcaggagtc caggagacct ctacaaatgc 180
agagtgactc tttaccaaca taaaccctag atacatgcaa aaagcaggac ccttcctcca 240
ggaatgtgcc atttcagatg cacagcacc atgcagaaaa gctggaattt tccttggaac 300
cgactgtgat agagggtgctt acatgaacat tgctactgtc tttctttttt tttgagacag 360
gtttcgcttg tgcccaggct gagtgcaatg cgtgatctca ctactgcaa ttccacctcc 420
aggttcaagc attctcctgc tcagcctcct agtagctggg ttacaggcac tgccaccatg 480
ccggctaatt ttgtattttt gtagagatgg atttctccat ttggtcaggc ggtctcgaac 540
cccaacctca gtgatctgcc acctcagcct cctaagtgtt ggattacagg atgagccacc 600
cgaccggcca ctactgtctt tctttgacct ttccagtttc gaagataaag aggaaataat 660
ttctctgaag tacttgataa aatttccaaa caaacacat gtccacttca ctgataaaaa 720
atttaccgca gtttggcacc taagagtatg acaacagcaa taaaaagtaa tttcaaagag 780
ttaagatttc ttcagcaaaa tagatgattc acatcttcaa gtcttttttg aaatcagtta 840
ttaatattat tctttcctca tttccatctg aatgactgca gcaatagttt tttttttttt 900
tttttttttt ttgagagatg gaatctcgct ctgtcgccca gcgggagtgct actggcgcaa 960
gcccggctca ccgcaatctc tgccaccgg 989

```

&lt;210&gt; 55

&lt;211&gt; 250

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 55

```

catttcccca ttggctctga tgttgaagat ttagttaaag aggctgtaag tcaggttcga 60
gcagaggcta ctacaagaag tagggaatca agtccctcac atgggctatt aaaactaggt 120
agtgggtggag tagtgaaaaa gaaatctgag caacttcata acgtaactgc ctttcaggga 180
aaagggcatt cttaggaac tgcatctggt aaccacacc ttgatccaag agctagggaa 240
acttcagttg
250

```

&lt;210&gt; 56

&lt;211&gt; 2270

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 56

```

gcgccccga gcagcgcccg cgcctccgc gccttctccg ccgggacctc gagcgaaaga 60
ggcccgcgcg ccgcccagcc ctgcctccc tgcccaccgg gcacaccgcg ccgccacccc 120
gaccccgctg cgcacggcct gtccgctgca caccagcttg ttggcgctct cgtcgccgcg 180
ctcgccccgg gctactcctg cgcgccacaa tgagctcccg catcgccagg gcgctcgcc 240
tagtcgtcac ccttctccac ttgaccaggc tggcgctctc cacctgcccc gctgctgcc 300
actgccccct ggaggcgccc aagtgcgcgc cgggagtcgg gctggctcgg gacggctgcg 360
gctgctgtaa ggtctgcgcc aagcagctca acgaggactg cagcaaaacg cagccctgcg 420
accacaccaa ggggctggaa tgcaacttcg gcgccaagtc caccgctctg aaggggatct 480
gcagagctca gtcagagggc agaccctgtg aatataactc cagaatctac caaacgggg 540
aaagtttcca gcccaactgt aaacatcagt gcacatgtat tgatggcgcc gtgggctgca 600
ttcctctgtg tccccaaaga ctatctctcc ccaacttggt ctgtcccaac cctcggtggt 660

```



tcaaagttac	cgggcagtg	tgcgaggagt	gggtctgtga	cgaggatagt	atcaaggacc	720
ccatggagga	ccaggacggc	ctccttgga	aggagctggg	attcgatgcc	tccgaggtgg	780
agttgacgag	aaacaatgaa	ttgattgcag	ttggaaaagg	cagctcactg	aagcggctcc	840
ctgtttttgg	aatggagcct	cgcattcctat	acaacccttt	acaaggccag	aatgtattg	900
ttcaaacaac	ttcatgggtcc	cagtgtctcaa	agacctgtgg	aactgggtatc	tccacacgag	960
ttaccaatga	caaccctgag	tgccgccttg	tgaaagaaac	cgggatttgt	gaggtgcggc	1020
cttgtggaca	gccagtgtac	agcagcctga	aaaagggcaa	gaaatgcagc	aagaccaaga	1080
aatccccga	accagtcagg	tttacttacg	ctggatgttt	gagtgtgaag	aaataccggc	1140
ccaagtactg	cggttcctgc	gtggacggcc	gatgtgcac	gccccagctg	accaggactg	1200
tgaagatg	gttcgcgtgc	gaagatgggg	agacattttc	caagaacgtc	atgatgatcc	1260
agtctgcaa	atgcaactac	aactgcccgc	atgccaatga	agcagcgttt	cccttctaca	1320
ggctgttcaa	tgacattcac	aaatttaggg	actaaatgct	acctgggttt	ccagggcaca	1380
cctagacaaa	caagggagaa	gagtgtcaga	atcagaatca	tggagaaaat	gggccccggg	1440
gggtgtgggtg	atgggactca	ttgtagaaag	gaagccttgc	tcattcttga	ggagcattaa	1500
ggtatttcga	aactgccaa	gggtgtgggtg	cggatggaca	ctaatagcagc	cacgatttga	1560
gaataactttg	cttcataagta	ttggagcaca	tgttactgct	tcatttttga	gcttgtggag	1620
ttgatgactt	tctgttttct	gtttgtaaat	tatttgctaa	gcataatttc	tctaggcttt	1680
tttctttttg	gggttctaca	gtcgtaaaag	agataataag	attagtttga	cagttttaaag	1740
ctttttattcg	tcttttgaca	aaagtaaatg	ggagggcatt	ccatcccttc	ctgaaggggg	1800
acactccatg	agtgtctgtg	agaggcagct	atctgcactc	taaactgcaa	acagaaatca	1860
gggtgttttaa	gactgaatgt	tttattttatc	aaaatgtagc	ttttggggag	ggaggggaaa	1920
tgtaatactg	gaataatttg	taaataattt	taattttata	ttcagtga	agattttatt	1980
tatggaatta	accattta	aaagaaatat	ttacttaata	tctgagtga	tgccatttcg	2040
tattttttaga	gggtgtccaa	agtcattagg	aacaacctag	ctcacgtact	caattattca	2100
aacaggactt	attgggatac	agcagtgaat	taagctatta	aaataagata	atgattgtct	2160
ttataccttc	agtagagaaa	agtctttgca	tataaagtaa	tgtttaaaaa	acatgtattg	2220
aacacgacat	tgtatgaagc	acaataaaga	ttctgaagct	aaaaaaaaaa		2270

&lt;210&gt; 57

&lt;211&gt; 1636

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 57

cttgaatgaa	gctgacacca	agaaccgcgg	gaagagcttg	ggcccaaagc	aggaaaggga	60
agcgtcga	ttggaaagga	accgctgctg	ctggcggaac	tcaagcccg	gcgccccac	120
cagtttgatt	ggaagtccag	ctgtgaaacc	tggagcgtcg	ccttctccc	agatggctcc	180
tggtttgctt	gggtctcaagg	acactgcac	gtcaaactga	tcccctggcc	gttggaggag	240
cagttcatcc	ctaaagggtt	tgaagccaaa	agccgaagta	gcaaaaatga	yacgaaagg	300
cggggcagcc	caaaagagaa	gacgctggac	tgtggtcaga	ttglctgggg	gctggccttc	360
agcccggtgg	cttccccacc	cagcaggaag	ctctgggcac	gccaccacc	ccaagtgcc	420
gatgtctctt	gcctggttct	tgctacggga	ctcaacgatg	ggcagatcaa	gatctgggag	480
gtgcagacag	ggctcctgct	tttgaatctt	tccggccacc	aagatgtcgt	gagagatctg	540
agcttcacac	ccagtggcag	tttgattttg	gtctcccgct	cacgggataa	gactcttcgc	600
atctgggacc	tgaataaaca	cggtaaacag	attcaagtgt	tatcgggcca	cctgcagtgg	660
gtttactgct	gttccatctc	cccagactgc	agcatgctgt	gctctgcagc	tggagagaag	720
tcggtctttc	tatggagcat	gaggtcctac	acgttaattc	ggaagctaga	gggccatcaa	780
agcagtgttg	tctcttctga	cttctcccc	gactctgcc	tgcttgcac	ggcttcttac	840
gataccaatg	tgattatgtg	ggacccttac	accggcgaaa	ggctgaggtc	actccaccac	900
accaggttg	accccgccat	ggatgacagt	gacgtccaca	ttagctcact	gagatctgtg	960
tgcttctctc	cagaaggctt	gtaccttgcc	acggtggcag	atgacagact	cctcaggatc	1020
tgggcccttg	aactgaaaac	tcccattgca	tttgctccta	tgaccaatgg	gctttgctgc	1080
acatttttcc	cacatgggtg	agtcattggc	acagggacaa	gagatggcca	cgtccagttc	1140
tggacagctc	ctagggtcct	gtcctcactg	aagcacttat	gccggaaaagc	ccttcgaagt	1200
ttcctaacaa	cttaccaagt	cctagcactg	ccaatcccca	agaaaatgaa	agagttcctc	1260
acatacagga	ctttttaagc	aacaccacat	cttgtgtctc	ttttagtcag	ggtaaatcgt	1320
cctgtcaaa	ggagttgtcg	gaataatggg	ccaaacatct	ggtcttgcac	tgaaatagca	1380
tttctttggg	attgtgaata	gaatgtagca	aaaccagatt	ccagtgtaca	taaaagaatt	1440

```

tttttgtctt taaatagata caaatgtcta tcaactttaa tcaagttgta acttatattg 1500
aagacaattt gatacataat aaaaaattat gacaatgtcc tgggaaaaaa aaaatgtaga 1560
aagatggtga aggggtggat ggatgaggag cgtggtgacg ggggcctgca gcggttggg 1620
gacctgtgc tgcgtt 1636

```

```

<210> 58
<211> 460
<212> DNA
<213> Homo sapiens

```

```

<400> 58
ccatgtgtgt atgagagaga gagagattgg gagggagagg gagctcacta gcgcatatgt 60
gcctccaggg ggctgcagat gtgtctgagg gtgagcctgg tgaaagagaa gacaaaagaa 120
tggaatgagc taaagcagcc gcctgggggtg ggaggccgag cccatttgta tgcagcaggg 180
ggcaggagcc cagcaaggga gcctccattc ccaggactct ggagggagct gagaccatcc 240
atgcccgcag agccctccct cacactccat cctgtccagc cctaattgtg caggtgggga 300
aactgaggct gggaagtcac atagcaagtg actggcagag ctgggactgg aaccaacca 360
gcctcctaga ccacggttct tcccatcaat ggaatgctag agactccagc caggtgggta 420
ccgagctcga attcgtaatc atgggtcatag ctgtttcctg 460

```

```

<210> 59
<211> 1049
<212> DNA
<213> Homo sapiens

```

```

<400> 59
atctgatcaa gaatacctgc cctgggcact ctgcggatgt ttctgtccac ttgttcacat 60
tgaggaccaa gatatacctt ttacagagg cactgtgtcg gtctaacaca gacacctcca 120
tgacgacatg ctggctcaca ttttgagtt ctgcagaagt cccctccca gcctggacta 180
cagcagcact ttcccggtgg ggtgcagtag ccgtttcgac agagcctgga gcactctgaa 240
gtcagtgctc gtgcaggttg tacctgggct ctgcattcct caggcattaa aggtcttttg 300
ggatctacaa tttttagtag ttttccattg tgagtctggg tcatactttt actgcttgat 360
aaaatgtaaa ctacacctag ttcatcttct ccaaatccca agatgtgacc ggaaaagtag 420
cctctacagg acccactagt gccgacacag agtgggtttt cttgccactg ctttgtcaca 480
ggacttttgc ggagcgttag gaaattccca ttacgatctc caaacacgta gcttccatac 540
aatctttctg actggcagcc ccggtataca aatccacca ccaaaggacc attactgaat 600
ggcttgaatt ctaaaagtga tggctcactt tcataatctt tcccccttat tatctgtaga 660
attctggctg atgatctggt ttttccattg gagtctgaac acagtatcgt taaattgatg 720
tttatatcag tgggatgtct atccacagca catctgcctg gatcgtggag cccatgagca 780
aacacttcgg ggggctggtt ggtgctggtg aagtgtgggt tgcctccttg tatggaataa 840
ggcacgttgc acatgtctgt gtccacatcc agccgtagca ctgagcctgt gaaatcactt 900
aaccatcca tttcttccat atcatccagt gtaatcatcc catcaccaag aatgatgtac 960
aaaaacccgt cagggccaaa gagcagttgc cctcccagat gctttctgtg gagttctgca 1020
acttcaagaa agactctggc tgttctcaa 1049

```

```

<210> 60
<211> 747
<212> DNA
<213> Homo sapiens

```

```

<400> 60
tttttcaaat cacatatggc ttctttgacc ccatcaaata actttattca cacaaacgtc 60
ccttaattta caaagcctca gtcattcata cacattaggg gatccacagt gttcaaggaa 120
cttaaatata atgtatcata ccaacccaag taaaccaagt acaaaaaata ttcataataa 180
gttggtcaca cgtaggtcct agattaccag cttctgtgca aaaaaaggaa atgaagaaaa 240
atagatttat taactagtat tggaaactaa ctttgtgcct ggcttaaaac ctccctcacg 300
ctcgtctgtc ccacacaaat gtttaagaag tcaactgcaat gtactccccg gctctgatga 360
aaagaagccc ctggcacaaa agattccagt gccctgaag aggtccctt cctcctgtgg 420

```

100% 100% 100% 100% 100% 100% 100% 100% 100% 100%

**IN THE UNITED STATES DESIGNATED/ELECTED OFFICE**

International Application No. : PCT/EP00/02005  
International Filing Date : 8 MARCH 2000  
Priority Date(s) Claimed : 9 MARCH 1999  
Applicant(s) (DO/EO/US) : THIERAUCH, Karl-Heinz, et al.  
Title: HUMAN NUCLEIC ACID AND PROTEIN SEQUENCES OBTAINED FROM  
ENDOTHELIAL CELLS

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

SIR:

Prior to calculating the national fee, and prior to examination in the National Phase of the above-identified International application, please amend as follows:

**IN THE CLAIMS:**

5. (Amended) A nucleic acid sequence according to claim 1, wherein it has 90% homology to a human nucleic acid sequence.
6. (Amended) A nucleic acid sequence according to claim 1, wherein it has 95% homology to a human nucleic acid sequence.
7. (Amended) A nucleic acid sequence comprising a portion of the nucleic acid sequences named in claim 1, in such a sufficient amount that they hybridize with the sequences according to claim 1.
8. (Amended) A nucleic acid sequence according to claim 1, wherein the size of the fragment has a length of at least 50 to 3000 bp.

9. (Amended) A nucleic acid sequence according to claim 1, wherein the size of the fragment has a length of at least 150 to 2800 bp.

10. (Amended) A nucleic acid sequence according to claim 1, wherein the size of the fragment has a length of at least a 150 to 2600 bp.

11. (Amended) A nucleic acid sequence according to claim 1, which codes at least one partial sequence of a bioactive polypeptide.

12. (Amended) An expression cassette, comprising a nucleic acid fragment or a sequence according to claim 1, together with at least one control or regulatory sequence.

14. (Amended) An expression cassette according to claim 12, wherein the DNA sequences located on the cassette code a fusion protein, which comprises a known protein and a bioactive polypeptide fragment.

15. (Amended) Use of nucleic acid sequences according to claim 1 for producing full-length genes.

17. (Amended) Host cell, containing as the heterologous part of its expressible genetic information a nucleic acid fragment according to claim 1.

19. (Amended) Host cell according to claim 17, wherein the prokaryotic cell system is E. coli, and the eukaryotic cell system is an animal, human or yeast cell system.

20. (Amended) A process for the production of a polypeptide or a fragment, wherein the host cells according to claim 17 are cultivated.

27. (Amended) Use of polypeptide sequences according to claim 23 as tools for finding active ingredients against angiogenetic diseases.

30. (Amended) Use of polypeptide sequences according to claim 23 as pharmaceutical agents in gene therapy for treatment of angiogenetic diseases.

31. (Amended) Use of polypeptide sequences according to claim 23 for the production of a pharmaceutical agent for treatment of angiogenetic diseases.

32. (Amended) Pharmaceutical agent, containing at least one polypeptide sequence according to claim 23.

33. (Amended) A nucleic acid sequence according to claim 1, wherein it is a genomic sequence.

34. (Amended) A nucleic acid sequence according to claim 1, wherein it is an mRNA sequence.

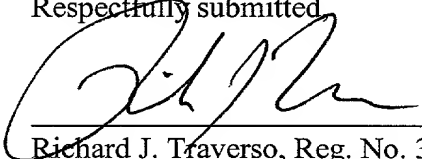
38. (Amended) Use of the nucleic acid sequences according to claim 1 and the peptides expressed by one of nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59, either alone or in a formulation as a pharmaceutical agent for treatment of psoriasis, arthritis, such as rheumatoid arthritis, hemangioma, angiofibroma, eye diseases, such as diabetic retinopathy, neovascular glaucoma, nephropathies, such as glomerulonephritis, diabetic nephropathy, malignant nephrosclerosis, thrombic microangiopathic syndrome, transplant rejections and glomerulopathy, fibrotic diseases, such as cirrhosis of the liver, mesangial cell proliferative diseases, arteriosclerosis and injuries of the nerve tissue.

REMARKS

The purpose of this Preliminary Amendment is to eliminate multiple dependent claims in order to avoid the additional fee. Applicants reserve the right to reintroduce claims to canceled combined subject matter.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned "**Version With Markings to Show Changes Made**".

Respectfully submitted,



Richard J. Traverso, Reg. No. 30,595

Attorney for Applicants

MILLEN, WHITE, ZELANO & BRANIGAN, P.C.

Arlington Courthouse Plaza 1

2200 Clarendon Boulevard, Suite 1400

Arlington, VA 22201

Direct Dial: 703-812-5310

Facsimile: 703-243-6410

Email: traverso@mwzb.com

AJZ(RJT):jmm

FILED: 7 SEPTEMBER 2001



VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claims 5-12, 14-15, 17, 19-20, 27, 30-34 and 38 have been amended as follows:

5. (Amended) A nucleic acid sequence according to claims 1 ~~to 4~~, wherein it has 90% homology to a human nucleic acid sequence.
6. (Amended) A nucleic acid sequence according to claims 1 ~~to 4~~, wherein it has 95% homology to a human nucleic acid sequence.
7. (Amended) A nucleic acid sequence comprising a portion of the nucleic acid sequences named in claims 1 ~~to 6~~, in such a sufficient amount that they hybridize with the sequences according to claims 1 ~~to 6~~.
8. (Amended) A nucleic acid sequence according to claims 1 ~~to 7~~, wherein the size of the fragment has a length of at least 50 to 3000 bp.
9. (Amended) A nucleic acid sequence according to claims 1 ~~to 7~~, wherein the size of the fragment has a length of at least 150 to 2800 bp.
10. (Amended) A nucleic acid sequence according to claims 1 ~~to 7~~, wherein the size of the fragment has a length of at least a 150 to 2600 bp.
11. (Amended) A nucleic acid sequence according to ~~one of~~ claims 1 ~~to 10~~, which codes at least one partial sequence of a bioactive polypeptide.
12. (Amended) An expression cassette, comprising a nucleic acid fragment or a sequence according to ~~one of~~ claims 1 ~~to 10~~, together with at least one control or regulatory sequence.
14. (Amended) An expression cassette according to ~~one of~~ claims 12 ~~and 13~~, wherein the DNA sequences located on the cassette code a fusion protein, which comprises a

known protein and a bioactive polypeptide fragment.

15. (Amended) Use of nucleic acid sequences according to ~~claims 1 to 11~~ 1 for producing full-length genes.

17. (Amended) Host cell, containing as the heterologous part of its expressible genetic information a nucleic acid fragment according to ~~one of claims 1 to 11~~ 1.

19. (Amended) Host cell according to ~~one of claims 17 or 18~~, wherein the prokaryotic cell system is E. coli, and the eukaryotic cell system is an animal, human or yeast cell system.

20. (Amended) A process for the production of a polypeptide or a fragment, wherein the host cells according to ~~claims 17 to 19~~ are cultivated.

27. (Amended) Use of polypeptide sequences according to ~~claims 23 to 26~~ as tools for finding active ingredients against angiogenetic diseases.

30. (Amended) Use of polypeptide sequences according to ~~claims 23 to 26~~ as pharmaceutical agents in gene therapy for treatment of angiogenetic diseases.

31. (Amended) Use of polypeptide sequences according to ~~claims 23 to 26~~ for the production of a pharmaceutical agent for treatment of angiogenetic diseases.

32. (Amended) Pharmaceutical agent, containing at least one polypeptide sequence according to ~~claims 23 to 26~~.

33. (Amended) A nucleic acid sequence according to ~~claims 1 to 11~~ 1, wherein it is a genomic sequence.

34. (Amended) A nucleic acid sequence according to ~~claims 1 to 11~~ 1, wherein it is an mRNA sequence.

38. (Amended) Use of the nucleic acid sequences according to claims ~~1 to 11~~ 1 and the peptides ~~according~~ expressed by one of nucleic acid sequences Seq. ID No. 1 to claims 23 to 26 Seq. ID No. 59, either alone or in a formulation as a pharmaceutical agent for treatment of psoriasis, arthritis, such as rheumatoid arthritis, hemangioma, angiofibroma, eye diseases, such as diabetic retinopathy, neovascular glaucoma, nephropathies, such as glomerulonephritis, diabetic nephropathy, malignant nephrosclerosis, thrombic microangiopathic syndrome, transplant rejections and glomerulopathy, fibrotic diseases, such as cirrhosis of the liver, mesangial cell proliferative diseases, arteriosclerosis and injuries of the nerve tissue.

09/936133

## Sequenzprotokoll

5

&lt;110&gt; Schering Aktiengesellschaft

<120> Menschliche Nukleinsäuresequenzen aus homo sapiensen  
Endothelzellen

10

&lt;130&gt; 51690AWOM1XX00-P

&lt;140&gt; 199 11 684.9

&lt;141&gt; 1999-04-14

15

&lt;160&gt; 60

&lt;210&gt; 1

&lt;211&gt; 1835

20

&lt;212&gt; DNA

&lt;213&gt; homo sapiens

&lt;400&gt; 1

25    ttttacagtt   ttccttttct   tcagagttta   ttttgaattt   tcatttttgg   ataaccaagc   60  
      agctctttta   gaagaatgca   cagaagagtc   attctggcac   ttttggatag   tacataagat   120  
      tttctttttt   ttttttaaat   tttttttaat   agtcacattc   agctcgcttg   ctcaaaccag   180  
      actcccatcat   tgggtgagca   agatgagccc   ataggattcc   agagttaata   cgtaaccgta   240  
      tatacaaaaca   gccaaaaaac   cataatggtg   ccacagggat   ggagcagggg   agggcatctc   300  
 30    taacgtgtcc   tctagtctat   ctctgctaaa   cagaacccac   gttacacatg   ataactagag   360  
      agcacactgt   gttgaaacga   ggatgctgac   cccaaatggc   acttggcagc   atgcagttta   420  
      aagcaaaaaga   gacatccttt   aataactgta   taaaatccag   gcagttccat   taaaggggtt   480  
      aagaaaacca   acaacaacaa   aaagcgaggg   actgtctgtt   gtcactgtca   aaaaggcact   540  
      tggagttaat   gggaccagga   ttggaggact   cttagctgat   acagatttca   gtacgatttc   600  
 35    attaaaaggc   ttggatgtta   agagaggaca   ctgagcgggt   cctgaaggga   gacgctgaga   660  
      tggaccgctg   agaagcggaa   cagatgaaca   caaagggaatc   aaatctttac   aaccaaatgt   720  
      catttaagcg   acaacaaaaa   aaggcaaac   ccaaaacgca   acctaaccac   agcaaaatct   780  
      aagcaaaatc   agacaacgaa   gcagcgatgc   atagctttcc   tttgagagaa   cgcatacctt   840  
      gagacgctac   gtgccaacct   aagttctcaa   cgacagcttc   acagtaggat   tattgtgata   900  
 40    aaaaatgact   aagcgaatga   aaaagtcca   tctgttccca   gaatccgagg   gagaactgag   960  
      gtgatcggtt   gagcatagcg   acatcacgtg   cggtttctta   atgtccctgg   tggcgggatac   1020  
      gccgagtcct   cggaaggaca   tctggacacc   actttcagcc   acctccttgc   aggggcgaca   1080  
      tccgccaag   tcatccttta   ttccgagtaa   taactttaat   tcctttctaa   catttacacg   1140  
      gcaaacagga   atgcagtaaa   cgtccacgtc   cgtcccacgg   ctgggctgcc   gttccgtttc   1200  
 45    ctccaacgaac   gggtaacgac   ttccatgaga   aaggatattt   ggcaatttta   tattccacag   1260  
      tcagggtggg   ctgcgatagc   tcatttaatg   ttaaaccgca   tcaggggcct   ctccctccgt   1320  
      ttctgccagg   ggcttttctt   gtcttctcct   tggcgagctc   gtgggcagat   cttctctggt   1380  
      gggggctggc   tgctgggtcc   gagggggcat   cgcagtcctg   tctggctcgt   tctcctgca   1440  
      ggctgggcag   ctggccacca   cttctccgac   tccaccctc   caacaagcat   cgcagggcac   1500  
 50    tgtcctcggg   ggtacagacc   gtgggtccac   attcgctacc   actctgttcc   acgtcatcca   1560  
      ggtacacgag   ctgcgtgtag   gccgtgctgt   ctggggctcg   aggcctcttc   tgcctgggtc   1620  
      cttggacggg   cgggtagtct   tgctgcagag   acaaagcatc   tccccttccc   ttccgggctg   1680  
      attttggttc   attcatatct   acgccagagt   ccaaactggc   atcattactt   ccgttccttc   1740  
      cagctctttg   gagaatcaat   gtatgaatgt   ctaacctgac   cggttgacct   gccatccaag   1800  
 55    gagacgaacc   acgcccgggg   gtgcggaagc   ggcct

&lt;210&gt; 2

&lt;211&gt; 581

60

&lt;212&gt; DNA

&lt;213&gt; homo sapiens

&lt;400&gt; 2

	gtttctagatt	gtttttattca	gtaatttagct	cttaagacccc	ctgggggcctg	tgctaccagg	60
	acactaacaa	cagtctctat	ccagttgctg	gttctgggtg	acgtgatctc	cccatcatga	120
5	tcaacttact	tctgtgggcc	cattagggaa	gtggtgacct	cgggagctat	ttgcctgttg	180
	agtgcacaca	cctggaaaca	tactgctctc	atTTTTtcat	ccacatcagt	gagaaatgag	240
	tgggccggtta	gcaagatata	actatgcaat	catgcaacaa	agctgcctaa	taacatttca	300
	ttttattacag	gactaaaagt	tcattattgt	ttgtaaagga	tgaattcata	acctctgcag	360
	agttatagtt	catacacagt	tgatttccat	ttataaaggc	agaaagtcct	tgTTTTtctc	420
10	aaatgtcaag	ctttgactga	aaactcccgt	ttttccagtc	actggagtgt	gtgcgtatga	480
	aagaaaatct	ttagcaatta	gatgggagag	aagggaaata	gtacttgaaa	tgtaggccct	540
	cacctcccca	tgacatcctc	catgagcctc	ctgatgtagt	g		
	<210>	3					
	<211>	516					
15	<212>	DNA					
	<213>	homo sapiens					
	<400>	3					
20	tagagatggt	ggttgatgac	ccccgggac	tggagcagat	gaatgaagag	tctctggaag	60
	tcagcccaga	catgtgcac	tacatcacag	aggacatgct	catgtcgcgg	aacctgaatg	120
	gacactctgg	gttgattgtg	aaagaaattg	ggtcttccac	ctcgagctct	tcagaaacag	180
	ttgttaagct	tcgtggccag	agtactgatt	ctcttccaca	gactatatgt	cggaaaccaa	240
	agacctccac	tgatcgacac	agcttgagcc	tcgatgacat	cagactttac	cagaaagact	300
25	tcttgcgcat	tgagggtctg	tgtcaggaca	ctgctcagag	ttacaccttt	ggatgtggcc	360
	atgaactgga	tgaggaaggc	ctctattgca	acagttgctt	ggcccagcag	tgcatcaaca	420
	tccaagatgc	ttttccagtc	aaaagaacca	gcaaatactt	ttctctggat	ctcactcatg	480
	atgaagttcc	agagtttgtt	gtgtaaagtc	cgtctg			
30	<210>	4					
	<211>	1099					
	<212>	DNA					
	<213>	homo sapiens					
35	<400>	4					
	cccacaacac	aggggcccctg	aaacacgcca	gcctctcctc	tgtgggtcagc	ttggcccagt	60
	ccctgctcact	ggatcacagc	ccattgtagg	tggggcatgg	tggggatcag	ggccccctggc	120
40	ccacgggggag	gtagaagaag	acctgggtccg	tgtaaggggtc	tgagaagggtg	ccctgggtcg	180
	gggggtgcgtc	ttggcccttg	cgtgccctca	tcccccggt	gaggcagcga	cacagcaggt	240
	gcaccaactc	cagcagggtta	agcaccagggt	agatgagtc	aaccaccaac	atgaagatga	300
	tgaagatggt	cttctccgtg	ggcgagagaga	caaagcagtc	cacgaggtag	gggcagggtg	360
	ctcgctggca	cacaaacacg	ggctccatgg	tccagccgta	caggcgccac	tggtccagta	420
45	ggaagcctgc	ctctagcaca	ctcttgca	gcacactggc	gacatagggtg	cccatcagtg	480
	ctccgcggat	gcgcaggcga	ccatcttctg	ccaccgagat	cttggccatc	tgacgctcta	540
	cgcccgccag	cgcccgctcc	acctgtgggt	ccttggccgg	cagtgcgccg	agctccccct	600
	ccctctgcgg	cagccgctct	tctgcgcgag	acaggtaa	gacatggccc	aggtagacca	660
	gggtgggtgt	gctgacgaag	aggaaactgca	gcacccagta	gcggatgtgg	gagatgggga	720
	aggcctggtc	atagcagacg	ttggtgcagc	ctggctgggc	cgtgttacac	tcgaaatctg	780
50	actgctcgct	accccacact	gactcgccgg	ccaggcccag	gatgaggatg	cggaaagatga	840
	agagcaccgt	cagccagatc	ttacccacca	cgttcgagtg	ctcctggacc	tggtccagca	900
	acttctccac	gaagccccag	tcacccatgg	ctcccgggcc	tccgtcggca	aggagacaga	960
	gcacgtcagt	gtgtcagcat	ggcatccttc	tcgttcgccc	agcaacaagc	ctgcaggggag	1020
55	gtctgccacg	ccggttctac	cgctgcctg	ccgggcggcc	cagggtggagg	tggggacgat	1080
	ggccggagtg	acgcccgcg					
	<210>	5					
	<211>	1015					
60	<212>	DNA					
	<213>	homo sapiens					
	<400>	5					
65	gaggataggg	agcctgggggt	caggagtgtg	ggagacacag	cgagactctg	tctccaaaaa	60
	aaaaaqtgct	ttttqaaaaat	gttgaggttg	aaatgatggg	aaccaacatt	ctttggattt	120

## -3-

agtggggagc ataatagcaa acacccccctt ggttcgcaca tgtacaggaa tgggacccag 180  
 ttggggcaca gccatggact tccccgcctt ggaatgtgtg gtgcaaagtg gggccagggc 240  
 ccagacccaa gaggagaggg tggtcgcag acacccccggg atgtcagcat cccccgacct 300  
 5 gccttctggc ggcacotccc ggggtgctgtg ttgagtcagc aggcattgggg tgagagcctg 360  
 gtatatgctg ggaacagggg gcagggggcca agcgttcctc cttcagcctt gacttggggc 420  
 atgcaccccc tctcccccac acacaaacaa gcacttctcc agtatgggtg caggacaggt 480  
 gtcccttcag tcctctgggt atgacctcaa gtccacttg ggccctgcag cccagcctgt 540  
 gttgtaacct ctgcgtcctc aagaccacac ctggaagatt cttcttcctt ttgaaggaga 600  
 10 atcatcattg ttgctttatc acttctaaga cattttgtac ggcaaggaca agttaaacag 660  
 aatgtgcttc cctccctggg gtctcacacg ctcccacgag aatgccacag gggccgtgca 720  
 ctggggcaggc ttctctgtag aaccccaggg gcttcggccc agaccacagc gtcttgccct 780  
 gagcctagag caggaggtcc cgaacttctg cattcacaga ccacctccac aattgttata 840  
 accaaaggcc tctgtttctg ttatttcaact taaatcaaca tgctattttg ttttcaactca 900  
 cttctgactt tagcctcgtg ctgagccgtg tatccatgca gtcattgttca cgtgctagtt 960  
 15 acgtttttct tcttacacat gaaaataaat gcataagtg tagaagaaaa aaaaa  
  
 <210> 6  
 <211> 2313  
 <212> DNA  
 20 <213> homo sapiens  
  
 <400> 6  
  
 ccagagcagg cctggtggtg agcagggagc gtgcaccgga cggcgggagc gagcaaatgg 60  
 25 gtctggccat ggagcacgga gggctcctacg ctcgggcggg gggcagctct cggggtgct 120  
 ggtattacct gcgtacttct ttctctctcg tctccctcat ccaattcctc atcatcctgg 180  
 ggctcgtgct cttcatgggt tatggcaacg tgcacgtgag cacagagtc cccctgcagg 240  
 ccaccgagcg ccgagccgag ggctataca gtcagctcct agggctcacg gcctcccagt 300  
 ccaacttgac caaggagctc aacttcacca cccgcgcca ggatgccatc atgcagatgt 360  
 30 ggctgaatgc tcgcccgcag ctggaccgca tcaatgccag cttccgcccag tggcagggtg 420  
 accgggtcat ctacacgaac aatcagaggt acatggctgc catcatcttg agtgagaagc 480  
 aatgcagaga tcaattcaag gacatgaaca agagctgcca tgccttgctc ttcattgctga 540  
 atcagaaggt gaagcgtg gaggtggaga tagccaagga gaagaccatt tgcactaagg 600  
 ataagaaaag cgtgctgctg aacaaacgcg tggcggagga acagctggtt gaatgctga 660  
 35 aaaccgggga gctgcagcac caagagcgcc actggccaag gagcaactgc aaaaagggtgca 720  
 agccctctgc ctgcccctgg acaaggacaa gtttgagatg gaccttcgta acctgtggg 780  
 ggactccatt atcccacgca gcctggacaa cctgggttac aacctctacc atcccctggg 840  
 ctcggaattg gcctccatcc gcagagcctg cgaccacatg cccagcctca tgagctccaa 900  
 ggtggaggag ctggcccgga gcctccgggc ggatatcgaa cgcgtggccc gcgagaactc 960  
 40 agacctccaa cgccagaagc tggaaagcca gcagggcctg cgggcccagtc agggaggcga 1020  
 acagaaggtg gagaaggagg ctcaggcccg ggaggccaag ctccaagctg aatgctcccg 1080  
 gcagaccag ctacgctgg aggagaaggc ggtgctgagg aaggaaacgag acaacctggc 1140  
 caaggagctg gaagagaaga agagggaggc ggagcagctc aggatggagc tggccatcag 1200  
 aaactcagcc ctggacacct gcatcaagac caagtgcgag ccgatgatgc cagtgtcaag 1260  
 45 gcccattggg cctgtcccca acccccagcc catcgaccca gctagcctgg aggagttcaa 1320  
 gaggaagatc ctggagtccc agaggcccc tgaggcatc cctgtagccc catccagtgg 1380  
 ctgaggaggc tccaggcctg aggaccaagg gatggccgga ctcggcgggt tgcggaggat 1440  
 gcagggatat gctcacagcg cccgacacaa cccctcccg ccgcccccaa ccaccaggg 1500  
 ccaccatcag acaactcctt gcatgcaaac ccctagtacc ctctcacacc cgcaccocg 1560  
 50 cctcacgatc cctcaccag agcacacggc cgcggagatg acgtcacgca agcaacggcg 1620  
 ctgacgtcac atatcacctg ggtgatggcg tcacgtggcc atgtagacgt cacgaagaga 1680  
 tatagcgatg gcgtcgtgca gatgcagcac gtgcacaca gacatgggga acttggcatg 1740  
 acgtcacacc gagatgcagc aacgacgtca cgggccatgt cgacgtcaca catattaatg 1800  
 tcacacagac gcggggatgg catcacacag acggtgatga tgtcacacac agacacagt 1860  
 55 acaacacaca ccatgacaac gacacctata gatatggcac caacatcaca tgcacgcatg 1920  
 ccccttcaca cacactttct acccaattct cacctagtgt cacgttcccc cgaccctggc 1980  
 acacgggcca aggtaccac aggatcccat cccctccgc acagccctgg gcccagcac 2040  
 ctcccctcct ccagcttctt ggccctccag ccacttctc acccccagtg cctggacccg 2100  
 gaggtgagaa caggaagcca ttcacctcgg ctccctgagc gtgagtgtt ccaggacccc 2160  
 60 ctccggggccc tgagccgggg gtgaggttca cctgtgtcg ggaggggagc cactccttct 2220  
 ccccaactc ccagccctgc ctgtggcccg ttgaaatgt ggtggcactt aataaatatt 2280  
 agtaaatcct taaaaaaaaa aaaaaaaaaa aaa  
  
 <210> 7  
 65 <211> 389

-4-

&lt;212&gt; DNA

&lt;213&gt; homo sapiens

&lt;400&gt; 7

5

gccccaaaaga tggcttcaaa agtaagaatg aaacatttga tccattcagc tttaggctat 60  
gccactggat tcatgtctag aaaagatagg ataatttctg taaagaaatg aagaccttgc 120  
tattctaaaaa tcagatcctt acagatccag atttcaggaa acaaatacat aggggactaa 180  
ctttccttgt tcagattagt ttttctcctt tgcacccagc tatataatat gaggaagtat 240  
10 tgacttttta aaagtgtttt agttttccat ttctttgata tgaaaagtaa tatttcggga 300  
gaacctgag ctattaataa tctatgtggc tagtgcgat atatttgtct gaatttgttc 360  
tccttttgtg gtgtccagtg ggtaacatc

&lt;210&gt; 8

15 &lt;211&gt; 157

&lt;212&gt; DNA

&lt;213&gt; homo sapiens

&lt;400&gt; 8

20

tgctttaaac agctgtgtca aaaactgaca tcagagagta aattgaattt ggtttttag 60  
gaagcaggaa gcaagccac tcaaacgtga aatttggcat gagggatcca gtaactttct 120  
cctcaatctg tgaactatat gtgagtttga tattttg

25 &lt;210&gt; 9

&lt;211&gt; 561

&lt;212&gt; DNA

&lt;213&gt; homo sapiens

30 &lt;400&gt; 9

aatagtcaaa acataaacia aagctaatta actggcactg ttgtcacctg agactaagtg 60  
gatgttgttg gctgacatac aggctcagcc agcagagaaa gaattctgaa ttccccttgc 120  
tgaactgaac tattctgtta catatggttg acaaatctgt gtgttatttc ttttctacct 180  
35 accatattta aatttatgag tatcaaccga ggacatagtc aaaccttcga tgatgaacat 240  
tcctgatttt ttgcctgatt aatctctgtt gagctctact tgtggtcatt caagatttta 300  
tgatgttgaa aggaaaagtg aatatgacct ttaaaaattg tattttgggt gatgatagtc 360  
tcaccactat aaaactgtca attattgcct aatgttaaaag atatccatca ttgtgattaa 420  
ttaaacctat aatgagtatt cttaatggag aattcttaat ggatggatta tcccctgac 480  
40 ttttctttaa aatttctctg cacacacagg acttctcatt ttccaataaa tgggtgtact 540  
ctgcccacat ttctaggaaa a

&lt;210&gt; 10

&lt;211&gt; 1508

45 &lt;212&gt; DNA

&lt;213&gt; homo sapiens

&lt;400&gt; 10

cacaaacacg agagactcca cggctctgcct gagcacgcc agcctcctag gctccagcac 60  
tcgcaggctc attcttctgc acgagcctct ctgtccagat ccataagcac ggctcagctca 120  
gggtcgcgga gcagtacgag gacaagtacc agcagcagct cctctgaaca gagactgcta 180  
ggatcatcct tctcctccgg gcctgttgct gatggcataa tccgggtgca acccaaactc 240  
gagctcaagc caggtgagct taagccactg agcaaggaa atttgggcct gcacgcctac 300  
55 aggtgtgagg actgtggcaa gtgcaaagt aaggagtga cctacccaag gcctctgcca 360  
tcagactgga tctgcgacaa gcagtgcctt tgctcggccc agaactgat tgactatggg 420  
acttgtgtat gctgtgtgaa aggtctcttc tatcactgtt ctaatgatga tgaggacaac 480  
tgtgtctgaca acccatgttc ttgcagccag totcactgtt gtacacgatg gtcagccatg 540  
gggtgtcatgt cctctttttt gccttgttta tgggtgttacc ttccagccaa ggggtgcctt 600  
60 aaattgtgcc aggggtgtta tgaccgggtt aacaggcctg gttgcccgtg taaaaactca 660  
aacacagttt gctgcaaagt tcccactgtc ccccttagga actttgaaaa accaacaatag 720  
catcattaat caggaatatt acagtaatga ggattttttt tttctttttt taatacacat 780  
atgcaaccaa ctaaacagtt ataactcttg cactgttaat agaaagttgg gatagctctt 840  
gctgttttgc gtgaaatgct ttttgtccat tgcccgttt aactgatag cttgttagaa 900  
65 ctcagctaat ggagctcaaa gtatgagata cagaacttgg tgacctatgt attgcataag 960



-5-

ctaaagcaac acagacactc ctaggcaaaag tttttgtttg tgaatagtagc ttgcaaaaact 1020  
 tgtaaattag cagatgactt ttttccattg ttttctccag agagaatgtg ctatatTTTT 1080  
 gtatatacaa taatatTTTgc aactgtgaaa aacaagtggg gccatactac atggcacaga 1140  
 caaaaaatat tatactaata tgttgtacat tCGgaagaat gtgaatcaat cagtattgtt 1200  
 5 tttagattgta ttttgcctta cagaaagcct ttattgtaag actctgattt ccctttggac 1260  
 ttcatgtata ttgtacagtt acagtaaaat tcaaccttta ttttctaatt ttttcaacat 1320  
 attgttttagt gtaaagaata tttatttgaa gttttattat tttataaaaa agaataTTTta 1380  
 ttttaagagg catcttacaa attttgcccc ttttatgagg atgtgatagt tgctgcaaat 1440  
 gaggggttac agatgcatat gtccaatata aaatagaaaa tatattaacg tttgaaatta 1500  
 10 aaaaaaaa  
  
 <210> 11  
 <211> 389  
 <212> DNA  
 15 <213> homo sapiens  
  
 <400> 11  
  
 gggcagggtga tcagggcaca catttcccgt ccattgagac agtagcattc ccggcaccca 60  
 20 tCGtgccagc tctcctcatt tttatgatga tgaccatcca cggtgagaca agtgcccagc 120  
 aggatgggtg gcccagctga agcacaggcc gctctgcaact tgcagataag acagccgtga 180  
 ctgtcctgct ggaaacccaa ggggcagatc ttactgcatg agagctctgg acatttctta 240  
 cagcgacaga tgtcacagcc gtgcttatto ttcagcaatc caagtggaca atacttgtca 300  
 cagattatgg gtctgcaact ctggggcctt gggcggcact cacagatctc acagttttgg 360  
 25 acctcgcccg cgaccacgct gggtagccga  
  
 <210> 12  
 <211> 981  
 <212> DNA  
 30 <213> homo sapiens  
  
 <400> 12  
  
 tttttttttt ttggattgca aaaatttatt aaaattggag acactgtttt aatcttcttg 60  
 35 tgccatgaga ctccatcagg cagtctacaa agaccactgg gaggctgagg atcacttgag 120  
 cccagaagtt tgaggctgta gtaagcttca aaggccactg cactctagct tgggtgaggc 180  
 aagacctttt caagcagtaa gctgcatgct tgcttgttgt ggtcattaaa aacctagtt 240  
 taggataaca acatattaat cagggcaaaa taaaaatgtg tgatgcttgt tagtagagta 300  
 acctcagaat caaaatggaa cgggttttaca gtgatcatat tatatttcat ttggcagaat 360  
 40 cattacatca ttggttacac tgaaaatcat cacatgtacc aaaagctgac tcacctagtt 420  
 taggataaca ggtctgctct tttgaagatg aaaaataata cccattttaa atttgcctta 480  
 ctcaatttcc ttctcagtc catttttaact tttaaacagc taatcactcc catctacaga 540  
 ttaagggtgta tatgccacca aaaccttttg ccacctttaa aatttctctc aaagttttaa 600  
 ctaatgcctg catttcttca atcatgaatt ctgagtcctt tgcttcttta aaacttgctc 660  
 45 cacacagtg agtcaagccg actctccata cccaagcaag tcatccatgg ataaaaacgt 720  
 taccaggagc agaaccatta agctgggtcca ggcaagttgg actccaccat ttcaacttcc 780  
 agctttctgt ctaatgcctg tgtgccaatg gcttgagtta ggcttgctct ttaggacttc 840  
 agtagctatt ctcatccttc cttggggaca caactgtcca taaggtgcta tccagagcca 900  
 cactgcatct gcaccagca ccatacctca caggagtcga ctcccacgag ccgcctgtat 960  
 50 ataagagtcc ttttgatgac g  
  
 <210> 13  
 <211> 401  
 <212> DNA  
 55 <213> homo sapiens  
  
 <400> 13  
  
 ataactacag cttcagcaga caactaaaga gactgcatta aggtgatttc tctggctata 60  
 60 aagagagccc ggccgcagag catgtgactg ctgggacctc tgggataggc aacactgccc 120  
 tctctcccc agagcgaccc cccgggcagg tccgggcccc aggaatgacc cagcaactgc 180  
 tccctaccca gcacactctc tttactgcc cctgcaatta tgctgtgaag atgactgggt 240  
 gtggctcatca cgaattcagag aaatcaagat ctatgaccat tttaggcaaa gagagaaaact 300  
 tggagaattg ctgaggacta ctgaaccttg ttttgctttt ttaaaaaata ctaaactctc 360  
 65 acttcagcat atttagttgt cattaaaatt aagctgatat t

-6-

<210> 14  
 <211> 1002  
 <212> DNA  
 5 <213> homo sapiens

<400> 14

```

10 gacaatataa aaagtggaaa caagcataaa ttgcagacat aaaataatct tctggtagaa 60
   acagttgtgg agaacaggtt gagtagagca acaacaacaa aagcttatgc agtcacottc 120
   tttgaaaatg ttaaatacaa gtcctattct ctttgtccag ctgggttttag ctagaggtag 180
   ccaattactt ctcttaaggt ccatggcatt cgcaggatt ctataaaagc caagttaact 240
   gaagtaaata tctggggccc atcgcacccc cactaagtac tttgtcacca tgttgtatct 300
   taaaagtcat ttttcaactgt ttgactcaga atttgggact tcagagtcaa acttcattgc 360
15 ttactccaaa cccagtttaa ttccccaatt ttttaagtag gcttagcttt gactgatttt 420
   tggctataac cgaaatgtaa atccaccttc aaacaacaaa gtttgacaag actgaaatgt 480
   tactgaaaac aatggtgcca tatgctocaa agacatttcc ccaagataac tgccaaagag 540
   tttttgagga ggacaatgat catttattat gtaggagcct tgatatctct gcaaaataga 600
   attaatacag ctcaaatgga gtagtaacca agcttttctg cccaggaagt aacaaacatc 660
20 actacgaaca tgagagtaca agaggaaact ttcataatgc attttttcat tcatacattc 720
   attcaataaa cattagccaa gctaattgtc caagccactg tgccagggtat taacaatata 780
   acaacaataa aagacacagt ccttcctctc aaggtgttca gtctagtagg gaagatgatt 840
   attcattaaa atttttgggtg catcagaatc atgaggagct tgtcaaaaat gtaaatctct 900
   gcctatgttc tcagatatcc tggttagggtc aggagtggga acccaaaatc aattctttta 960
25 acaaacacta aaggtgatcc taacacaggc ggtgtgagga cc

```

<210> 15  
 <211> 280  
 <212> DNA  
 30 <213> homo sapiens

<400> 15

```

35 cgaggtgggc caccctgtgc tggctcgaga tttttaaatg aggattacat tatcctatct 60
   ataatatctc tattctaatc tattgtattc ttacaattaa atgtatcaaa taattcttaa 120
   aaacattatt agaaacaaac tgcctaatac cttataagac taaaaaaatc accaagatga 180
   aactgtatta tgactctcaa tatttaaaca tttaaaaaaa tgttagtgtt tgtaagcac 240
   caatcttaac tatttcaact gcccgggcgg ccgctcgagg

```

40 <210> 16  
 <211> 2041  
 <212> DNA  
 <213> homo sapiens

45 <400> 16

```

   cccccgcgag aactcccccc tggaaatagga tttttaaaac ccttgacaat tagaaatcct 60
   atagagggtta gcatttttta ggtaaaaata tggttgcccc tacagggatc atgcaacttc 120
   cttaaaacca attcagcaca tatgtataaa gaaccctttt taaaaacatt tgtacttgaa 180
50 atacagacac agtgatgctg aagacactaa acaaaaactg aaaagtacta taccttgata 240
   aattttgtta ttgccttctt tagagacttt ataactctta gttgattttc aaggacttga 300
   atttaataat ggggtaatta cacaagacgt aaaggatttt ttaaaaacaa gtattttttt 360
   ttacctctag catcaattct tttataaaga atgctaaata aattacattt tttgttcagt 420
   aaaactgaag atagaccatt taaatgcttc taccaaattt aacgcagctt aattagggac 480
55 caggtacata ttttcttctg aacatttttg gtcaagcatg totaaccata aaagcaaatg 540
   gaattttaag aggtagattt tttttccatg atgcattttg ttaataaatg tgtcaagaaa 600
   ataaaaacaa gcactgagtg tgttctcttg aagtataagg gtctaataaa aaataaaaaga 660
   tagatatattg ttatagtctg acatttttaac agtcatagta ttagacgttt cgtgaccagt 720
   gcatttttga ctctctcagg atcaaaaatac gactctgcca actgtattaa atcctcctcc 780
60 acccctcca ccagttggtc cacagcttcc tgggtggctg ttgtcatcaa atccattggg 840
   ccgaaatgaa catgaagcag atgcagcttg gagggcccg gctcgagcat tcaactcttg 900
   ttocctgtaaa tatagtttat tgtcttttgt tatagcatcc ataagttctt tctgtagagg 960
   tgggtctcca tttatccaga gtccactgggt tgggttatta ccacttaaac cattagtact 1020
   atgctgtttt ttatacaaaa gcacataagc tgtgtccttt ggaaacctgc tcgtattttt 1080
65 ctggactgac tgaaatgaag taaatgtcac tctactgtca ttaataaaaa acccattctt 1140

```

-7-

```

5   ttgacatttc cttattttcc aaatcctggt caaaaactgc actgggacta tctctcccta 1200
    gtaaagtact ctgggaggat gctaattgcca gagcctcaga ctggtggtac atctgatatg 1260
    aagagtctgt acttgtgata ttcttggcat aagaatagta atgcccactt tcagaggata 1320
    taccagagtg aaccacaacg gaacttaata gatagggcac caattttgtg caggaagcct 1380
10  catcagtcctc tgaaggcttt aattttttag caaggttctc actaagatca gtgaagtcaa 1440
    catctacaga ccaactttct gacaatgaag agaaagaagt aattcttcta actggcaact 1500
    ccaaaaccag tggccagtga tacattgtct aaaaattttc ttctcacatg atacttctga 1560
    tcatatgaaa atctcaggag agtaagaata aggtattcag gttcctccgt gatttgcata 1620
    gttttctcag cattttgcag agaggcacag ttttcacaat aatatgtggt atcaccagta 1680
15  agaatctctg gagcccaaaa aataatttag taagtcagtt actgaagggt tggtttcacc 1740
    tcccgttttc tgaggtagat ctttattaac aagaatcttg ttagattcgt tagggacaga 1800
    agtgttttca gaacagtaaa actcattagg aggactgcct atggtttttt cattcacaa 1860
    tgagtcacag atgaaggcag ctgttggttg attataaact actggctcct ctgaaggacc 1920
    gggtagacag gcttgcatga gaccaccatc ttgtatactg ggtgatgatg ctggatcttg 1980
20  gacagacatg ttttccaaag aagaggaagc aaaaacgca agcgaaagat ctgtaaaggc 2040
    t

<210> 17
<211> 235
20  <212> DNA
    <213> homo sapiens

<400> 17

25  cgccccgggc aggtgtcagg ggttccaaac cagcctgggg aaacacagcg tagaccctc 60
    acctctacaa ataaaaaatt aaaaaattag ccagggtgtg cagcgaaaca ctgtagtctc 120
    agatactcag gagactgagc tggaaaggat cacttgagcc caagaagttc aagggtacag 180
    tgggccacga tcatgtcatt acactccagc ttgggtgaca aaatgagact gtcta

30  <210> 18
    <211> 2732
    <212> DNA
    <213> homo sapiens

35  <400> 18

    gtgtggagtt tcagctgcta ttgactataa gagctatgga acagaaaaag cttgctggct 60
    tcatgttgat aactacttta tatggagctt cattggacct gttaccttca ttattctgct 120
    aaatattatc ttcttgggtga tcacattgtg caaaatgggt aagcattcaa acactttgaa 180
40  accagattct agcaggttgg aaaacattaa gtcttgggtg cttggcgctt tcgctcttct 240
    gtgtcttctt ggctcacct ggtccttttg gttgcttttt attaatgagg agactattgt 300
    gatggcatat ctcttcacta tatttaatgc tttccaggga gtgttcattt tcatctttca 360
    ctgtgctctc caaaagaaag tacgaaaaga atatggcaag tgcttcagac actcatactg 420
    ctgtggaggc ctcccaactg agagtcccca cagttcagtg aaggcatcaa ccaccagaac 480
45  cagtgctcgc tattcctctg gcacacagag tcgtataaga agaattgtga atgatactgt 540
    gagaaaacaa tcagaatctt cttttatctc aggtgacatc aatagcactt caacacttaa 600
    tcaagggtggc ataaatctta atatattatt acaggactga catcacatgg tctgagagcc 660
    catcttcaag atttatatca tttagaggac attcactgaa caatgccagg gatacaagtg 720
    ccatggatac tctaccgcta aatggtaatt ttaacaacag ctactcgctg cacaaggggtg 780
50  actataatga cagcgtgcaa gttgtggact gtggactaag tctgaatgat actgcttttg 840
    agaaaatgat catttcagaa ttagtgaca acaacttacg gggcagcagc aagactcaca 900
    acctcgagct cagctacca gtcaaactg tgattggagg tagcagcagt gaagatgatg 960
    ctattgtggc agatgcttca tctttaatgc acagcgaca cccagggtg gagctccatc 1020
    acaaagaact cgaggcacca cttattctc agcggactca ctccctctg taccaacccc 1080
55  agaagaaagt gaagtccgag ggaactgaca gctatgtct ccaactgaca gcagaggctg 1140
    aagatcacct acagtcccc aacagagact ctctttatac aagcatgccc aatcttagag 1200
    actctcccta tccggagagc agcctgaca tggagaaga cctctctccc tccaggagga 1260
    gtgagaatga ggacatttac tataaaagca tgccaaatct tggagctggc catcagcttc 1320
    aagatgtgcta ccagatcagc aggggcaata gtgatggtt tataatcccc attaaacaa 1380
60  aggggtgtat tccagaagga gatgttagag aaggacaaat gcagctggtt acaagtcttt 1440
    aatcatacag ctaaggaatt ccaagggcca catgcgagta ttaataaata aagacacat 1500
    tggcctgacg cagctccctc aaactctgct tgaagagatg actcttgacc tgtggttctc 1560
    tgggtgtaaaa aagatgactg aaccttgtag ttctgtgaat ttttataaaa catacaaaaa 1620
    ctttgtatat acacagagta tactaaagtg aattatttgt tacaagaaa agagatgcca 1680
65  gccagggtatt ttaagattct gctgctgttt agagaaattg tgaacaagc aaaacaaaac 1740

```

-8-

tttccagcca ttttactgca gcagtctgtg aactaaatgt gtaaatatgg ctgcaccatt 1800  
 tttgtaggcc tgcatgtgat tatatacaag acgtaggcct taaaatcctg tgggacaaat 1860  
 ttactgtacc ttactattcc tgacaagact tggaaaagca ggagagatat tctgcatacag 1920  
 tttgcagttc actgcaaatac ttttacatta aggcaaagat tgaaaacatg ctttaaccact 1980  
 5 agcaatcaag ccacaggcct tatttcatat gtttcctcaa ctgtacaatg aactattctc 2040  
 atgaaaaatg gctaaagaaa ttatatattg ttctattgct agggtaaaat aaatacattt 2100  
 gtgtccaact gaaatataat tgtcattaaa ataattttta agagtgaaga aaatattgtg 2160  
 aaaagctcct gggtgcacat gttatgaaat gttttttcct acactttgtc atggtaagtt 2220  
 ctactcattt tcaacttcttt tccactgtat acagtgttct gctttgacaa agttagtctt 2280  
 10 tattacttac atttaaattt cttattgcca aaagaacgtg ttttatgggg agaaacaaac 2340  
 tctttgaagc cagttatgtc atgccttgca caaaagtgat gaaatctaga aaagattgtg 2400  
 tgtcacccct gtttattcct gaacagaggg caaagagggc actgggcact tctcacaac 2460  
 tttctagtga acaaaagggt cctattcctt tttaaaaaaa taaaataaaa cataaatatt 2520  
 actcttccat attccttctg cctatattta gtaattaatt tattttatga taaagttcta 2580  
 15 atgaaatgta aattgtttca gcaaaattct gctttttttt catccctttg tgtaaacctg 2640  
 ttaataatga gcccatcact aatatccagt gtaaaagttt acacgggttg acagtaataa 2700  
 aatgtgaatt ttttcaagtt aaaaaaaaaa aa

<210> 19  
 20 <211> 276  
 <212> DNA  
 <213> homo sapiens

<400> 19  
 25 ctccctaaat gattttaaaa taaattggat aaacatatga tataaagtgg gtactttaga 60  
 aaccgccttt gcatattttt tatgtacaaa tctttgtata caattccgat gttccttata 120  
 tattccctat atagcaaac aaaccagga cctcccaact gcatgcctca agtccctgtg 180  
 gagcactctg gcaactggat ggcctactt gctttctgac aaaatagctg gaaaggagga 240  
 30 gggaccaatt aaatacctcg gccgcgacca cgctgg

<210> 20  
 <211> 2361  
 <212> DNA  
 35 <213> homo sapiens

<400> 20  
 40 attgtaccag ccttgatgaa cgtgggcccct gcttcgcttt tgagggccat aagctcattg 60  
 cccactgggt tagaggctac cttatcattg tctcccgtga ccggaagggt tctcccaagt 120  
 cagagtttac cagcagggtat tcacagagct ccgacaagca gattctaaac atctatgacc 180  
 tgtgcaacaa gttcatagcc tatagcacgc tctttgagga tgtagtggat gtgcttctg 240  
 agtggggctc cctgtactgt ctgacgcggg atgggcgggt ccacgcactg caggagaagg 300  
 acacacagac caaactggag atgctgttta agaagaacct atttgagatg gcgattaacc 360  
 45 ttgccaaagag ccagcatctg gacagtgtat ggctggccca gattttcatg cagtatggag 420  
 accatctcta cagcaagggc aaccacgatg gggctgtcca gcaatatac cgaaccattg 480  
 gaaagtggga gccatcctac gtgatccga agtttctgga tgcccagcgc attcacaacc 540  
 tgactgccta cctgcagacc ctgcaccgac aatccctggc caatgccgac cataccacc 600  
 tgctcctcaa ctgctatacc aagctcaagg acagctcgaa gctggaggag ttcatacaga 660  
 50 aaaagagtga gagtgaagtc cactttgatg tggagacagc catcaagggt ctcgggcagg 720  
 ctggctacta ctcccatgcc ctgtatctgg cggagaacca tgcacatcat gagtgggtacc 780  
 tgaagatcca gctagaagac attaagaatt atcaggaagc ccttcgatac atcggcaagc 840  
 tgccttttga gcaggcagag agcaacatga agcgtacgg caagatcctc atgcaccaca 900  
 taccagagca gacaactcag ttgctgaagg gactttgtac tgattatcgg cccagcctcg 960  
 55 aaggccgcag cगतaggag gccccaggct gcagggccaa ctctgaggag ttcattccca 1020  
 tctttgccaa taaccgcga gagctgaaag ccttcctaga gcacatgagt gaagtgcagc 1080  
 cagactcacc ccaggggatc tacgacacac tccttgagct gcgactgcag aactgggccc 1140  
 acgagaagga tccacaggtc aaagagaagc ttcacgcaga ggccatttcc ctgctgaaga 1200  
 gtggctcgctt ctgacagctc tttgacaagg ccttggtcct gtgccagatg cagacttcc 1260  
 60 aggtgggtgt cctttacctt tatgacagg ggaagctgtt ccagcagatc atgcactacc 1320  
 acatgcagca cgagcagtac cggcaggtca tcagcgtgtg tgagcgccat ggggagcagg 1380  
 acccctcctt gtgggagcag gccctcagct acttcgctcg caaggaggag gactgcaagg 1440  
 agtatgtggc agctgtctc aagcatatcg agaacaagaa cctcatgcca cctcttctag 1500  
 tgggtgcagac cctggcccac aactccacg ccactctc cgtcatcagg gactaacctg 1560  
 65 tccaaaaact acagaaacag agccagcaga ttgcacagga tgagctgcgg gtgcggcggg 1620

5	accgagagga	gaccacccgt	atccgccagg	agatccaaga	gtcgaaggcc	agtcctaaga	1680
	ttttocaaaa	gaccaagtgc	agcatctgt	acagtgcctt	ggagttgccc	tcagtccact	1740
	tcctgtgtgg	ccactccttc	caccaacact	gctttgagag	ttactcggaa	agtgatgctg	1800
	actgccccac	ctgcctccct	gaaaaccgga	aggctatgga	tatgatccgg	gcccaggaac	1860
	agaaacgaga	tctccatgat	caattccagc	atcagctcaa	gtgctccaat	gacagctttt	1920
	ctgtgattgc	tgactacttt	ggcagagggtg	ttttcaacaa	attgactctg	ctgaccgacc	1980
	ctcccacagc	cagactgacc	tccagcctgg	aggtctgggt	gcaacgcgac	ctactcatgc	2040
	actccaggag	gggcacttaa	gcagcctgga	ggaagatgtg	ggcaacagtg	gaggaccaag	2100
	agaacagaca	caatgggacc	tgggcggggc	ttacacagaa	ggctggctga	catgcccagg	2160
	gctccactct	catctaattgt	cacagccctc	acaagactaa	agcggaaactt	tttcttttcc	2220
10	ctgggccttcc	ttaatttttaa	gtcaagcttg	gcaatccctt	cctctttaac	taggcaggtg	2280
	ttagaatcat	ttccagatta	atggggggga	aggggaacct	caggcaaacc	tcttgaagtt	2340
	ttggaaaaaa	aagctggttt	c				
15							
	<210> 21						
	<211> 179						
	<212> DNA						
	<213> homo sapiens						
20							
	<400> 21						
25	agggtgttaga	tgctcttgaa	aaagaaactg	catctaagct	gtcagaaatg	gattcttttta	60
	acaatcaact	aaaggaactg	agagaaacct	acaacacaca	gcagttagcc	cttgaacagc	120
	tttataagat	caacgtgaca	agttgaagga	aattgaaagg	aaaaaattag	aactaatgc	
30							
	<210> 22						
	<211> 905						
	<212> DNA						
	<213> homo sapiens						
35							
	<400> 22						
40	tttttttttt	ttctttaacc	gtgtgggtctt	tatttcagtg	ccagtgttac	agatacaaca	60
	caaatgttcc	agttagaagg	aattcaaacg	gaatgccag	gtccaagcca	ggtccaagaa	120
	ataaaaaggg	aggtttggag	taatagataa	gatgactcca	atactcactc	ttcctaaggg	180
	caaaaggtagt	tttgatacag	agtctgatct	ttgaaactgg	tgaactcctc	ttccacccat	240
	taccatagtt	caaacaggca	agttatgggc	ttaggagcac	tttaaaattt	gtgggtgggaa	300
	taggggtcatt	aataactatg	aatatatctt	ttagaagggtg	accatttttg	actttaaagg	360
	gaatcaattt	tgaaaatcat	ggagactatt	catgactaca	gctaagaagt	ggcgagaaag	420
	gggagctgga	agagccttgg	aagtttctat	tacaaataga	gcaccatata	cttcattgcca	480
	aatctcaaca	aaagctcttt	ttaactccat	ctgtccagtg	tttacaaata	aactcgcaag	540
	gtctgaccag	ttcttggtaa	caaacatata	tgtgtgtgtc	tgtgtgtata	cagcaatgca	600
45	cagaaaaggc	taccaggagc	ctaattgcctc	tttcaaact	tgggggaacc	agtagaaaaa	660
	ggcaggggtc	cctaattgtcc	attattacat	ttccattccg	aatgccagat	gttaaaagtg	720
	cctgaagatg	gtaacccagc	tagtgaggaa	taaatacccc	accttgccca	gtccacagag	780
	aaacaacagt	agaaagaagg	ggcaactctt	tgctgcagag	acaaagttag	tgtttttttcg	840
	ccatggattg	cagtccctctc	ctccagacca	gctgtctatt	tcctcagggg	cccaggggaat	900
	gttga						
50							
	<210> 23						
	<211> 2134						
	<212> DNA						
	<213> homo sapiens						
55							
	<400> 23						
60	ggtctcttct	ttcctttttt	tttttccaaa	agtgttcttt	tatttctagt	aacatatatt	60
	gtataaatac	tctattttat	atgcacttcc	acaaaagcga	tataatttaa	aagttttttt	120
	catttagaaat	aaatgtataa	aaataaatat	gttattatag	gcattttatta	ctaactatag	180
	tccttcttgg	aaggaaacac	caaaccaata	cttataaagt	acatgtaatt	tatagtaaca	240
	tattttacta	tatacatatg	gaaaaaatca	tattctcaca	gaagagctga	acagacattc	300
	accaggatac	gactgttgga	ccagctgctg	gagatggacc	tgctacccct	cagcagcctc	360
	cccaccacaa	gacaagtgat	ctcaatgtcc	ccaaacctgt	gggaccctgt	tctacacacc	420
	tcatttttgt	tcgggcgttt	catcctcctt	gtgtgattgt	actgattttc	atgagacaca	480
	agttacttct	ttacatccat	attocccaaa	caqqgttaca	tqqtatqaaa	qaaaqqaagt	540
	65						

[illegible]

-11-

<211> 1420  
 <212> DNA  
 <213> homo sapiens

5 &lt;400&gt; 25

```

gttcagcatt gtttctgctt ctgaaatctg tatagtacac tggtttgtaa tcattatgtc 60
ttcattgaaa tccttgctac ttctcttctt cctcaatgaa agacacgaga gacaagagcg 120
acacaagctt aagaaaaacg agcaaggaag agtatcttca ttattctcat tttctctgag 180
10 ttggaacaaa aaacatgaag gactccaact agaagacaga tatttacatt taaatagatt 240
agtgggaaaa cttaaagagt ttccacatat tagttttcat tttttgagtc aagagactgc 300
tccttgtaact gggagacact agtagtatat gtttgtaatg ttactttaaa attatctttt 360
tattttataaa ggcccataaa tactgggttaa actctgttaa aagtgggcct tctatcttgg 420
atgggtttcac tgccatcagc catgctgata tattagaaat ggcatcccta tctacttact 480
15 ttaagtctta aaattatata taaaatgctt tatttagaaa acctacatga tacagtgggtg 540
tcagccttgc catgtatcag tttcacttga aatttgagac caattaaatt tcaactgttt 600
aggggtggaga aagaggtact ggaaaacatg cagatgagga tatcttttat gtgcaacagt 660
atcctttgca tgggaggaga gttactcttg aaaggcaggc agcttaagtg gacaatgttt 720
tgtatatagt tgagaatttt acgacacttt taaaaattgt gtaattgtta aatgtccagt 780
20 tttgctctgt tttgcctgaa gttttagtat ttgttttcta ggtggacctc tgaaaaccaa 840
accagtacct ggggaggtta gatgtgtgtt tcaggcttgg agtgtatgag tggttttgct 900
tgtattttcc tccagagatt ttgaacttta ataattgctt gtgtgttttt ttttttttaa 960
gtggctttgt ttttttttct caagtaaaaat tgtgaacata tttcctttat aggggcaggg 1020
catgagttag ggagactgaa gagtattgta gactgtacat gtgccttctt aatgtgtttc 1080
25 tcgacacatt ttttttcagt aacttgaaaa ttcaaaaggg acatttggtt aggttactgt 1140
acatcaatct atgcataaat ggcagcttgt tttcttgagc cactgtctaa attttgtttt 1200
tatagaaatt ttttatactg attggttcat agatggtcag ttttgtacac agactgaaca 1260
atacagcact ttgccaataa tgagtgtagc attgtttaaa cattgtgtgt taacacctgt 1320
tctttgtaat tgggttgtgg tgcattttgc actacctgga gttacagttt tcaatctgtc 1380
30 agtaataaaa gtgtccttta acttcaaaaa aaaaaaaaaa

```

<210> 26  
 <211> 689  
 <212> DNA  
 <213> homo sapiens

35 &lt;400&gt; 26

```

aaacaaacaa aaaaaaagtt agtactgtat atgtaaatac tagcttttca atgtgctata 60
40 caaacaatta tagcacatcc ttcccttttac tctgtctcac ctcccttagg tgagtacttc 120
cttaataaag tgctaaacat acatatacgg aacttgaaag ctttggttag ccttgcccta 180
ggtaatcagc ctagtttaca ctgtttccag ggagtagttg aattactata aaccattagc 240
cacttgcttc tgcaccattt atcacaccag gacagggtct ctcaacctgg gcgctactgt 300
catttggggc caggtgattc ttccctgcaa gggctgtcct gtacctgccg gggcgccgcg 360
45 tcgaagcgtg gtgcggcccg aggtactgaa aggaccaagg agctctggct gccctcagga 420
attccaaatg accgaaggaa caaagcttca gggctctggg tgggtgtctc cactattcag 480
gaggtggtcg gaggtaacgc agcttcattt cgtccagtcc tttccagtat ttaaagttgt 540
tgtcaagatg ctgcattaaa tcaggcaggt ctacaaaggc atcccaagca tcaaacatgt 600
ctgtgatgaa gtaatcaatg aaacaccgga acctccgacc acctcctgaa tagtgggaga 660
50 cacaccaga gcctgaagtt tgtccttcg

```

<210> 27  
 <211> 471  
 <212> DNA  
 <213> homo sapiens

55 &lt;400&gt; 27

```

tcccagcggc atgaagtttg agattggcca ggcctgtac ctgggcttca tctccttcgt 60
60 cctctctgct catttgggtggc acctgtcttt gcctgtcctg ccaggacgag gcacctaca 120
agccctaacc caggccccgc ccagggccac cagcaccact gcaaacaccg cactgtccta 180
ccagccacca gctgcctaca aagacaatcg ggccccctca gtgacctcgg ccaccacagc 240
gggtacaggc tgaacgacta cgtgtgagtc ccacagcct gcttctcccc tgggctgctg 300
tgggctgggt cccggcgggg ctgtcaatgg aggcaggggg tccagcacia agtttacttc 360
65 tgggcaattt ttgtatccaa ggaaataatg tgaatgcgag gaaatgtctt tagagcacag 420

```

65       $\langle 210 \rangle$    30



-13-

<211> 1546  
 <212> DNA  
 <213> homo sapiens

5 &lt;400&gt; 30

```

aaaataagta ggaatgggca gtgggtattc acattcacta caccttttcc atttgcta 60
aaggccctgc caggctggga gggaattgtc cctgcctgct tctggagaaa gaagatattg 120
10 acaccatcta cgggcaccat ggaactgctt caagtgacca ttctttttct tctgcccagt 180
   atttgcagca gtaacagcac aggtgtttta gaggcagcta ataattcact tgttgttact 240
   acaacaaaac catctataac aacaccaaac acagaatcat tacagaaaaa tgttgtcaca 300
   ccaacaactg gaacaactoc taaaggaaca atcaccaatg aattacttaa aatgtctctg 360
   atgtcaacag ctactttttt aacaagtaaa gatgaaggat tgaaagccac aaccactgat 420
15 gtcaggaaga atgactccat catttcaaac gtaacagtaa caagtgttac acttccaaat 480
   gctgtttcaa cattacaaag ttccaaaccc aagactgaaa ctgagagttc aattaaaaca 540
   acagaaatac caggtagtgt tctacaacca gatgcatcac cttctaaaac tggtagatta 600
   acctcaatac cagttacaat tccagaaaac acctcacagt ctcaagtaat aggcactgag 660
   ggtggaaaaa atgcaagcac ttcagcaacc agccggtctt attccagtat tattttgccg 720
20 gtggttattg ctttgattgt aataacactt tcagtatttg ttctggtggg tttgtaccga 780
   atgtgctgga aggcagatcc gggcacacca gaaaatggaa atgatcaacc tcagtctgat 840
   aaagagagcg tgaagcttct taccgttaag acaattttct atgagtctgg tgagcactct 900
   gcacaaggaa aaaccaagaa ctgacagctt gaggaattct ctccacacct aggcaataat 960
   tacgcttaat cttcagcttc tatgcaccaa gcgtggaaaa ggagaaagtc ctgcagaatc 1020
25 aatcccgact tccataacct ctgctggact gtaccagacg tctgtcccag taaagtgatg 1080
   tccagctgac atgcaataat ttgatggaat caaaaagaac cccggggctc tcctgttctc 1140
   tcacatttaa aaattccatt actccattta caggagcgtt cctaggaaaa ggaatttttag 1200
   gaggagaatt tgtgagcagt gaatctgaca gccaggaggg tgggctcgct gataggcatg 1260
   actttcotta atgtttaaag ttttcggggc caagaatttt tatccatgaa gactttccta 1320
30 cttttctcgg tgttcttata ttacctactg ttagtattta ttgtttacca ctatgttaat 1380
   gcagggaaaa gttgcacgtg tattattaaa tattaggtag aaatcatacc atgctacttt 1440
   gtacatataa gtattttatt cctgctttcg tgttactttt aataaataac tactgtactc 1500
   aatactctaa aaatactata acatgactgt gaaaatggca aaaaaa

```

35 <210> 31  
 <211> 750  
 <212> DNA  
 <213> homo sapiens

40 &lt;400&gt; 31

```

cacttgggca cccccatttt ctaaaaaaat ggaaatctgg agggcaaaaa aggtgtgctg 60
aagggaagtg cctctgatgg cccaaaaaac ttcttccaaa ctagttagtg aatggaatgg 120
atagcaaatg gatccttttt ggccctcttt ggagcatgcc ttccctatct tatccttggc 180
45 cccactaaag cagaacgtta cggatatctt tgtttttgcc attggatgcc tatctggcca 240
   aacagccctt ccctaattgg aaaatgcagt cctgtttaaa acctttgatt tacgactact 300
   tgtacatgct tgctcattac aattttgaca ttttttacct agtgaagacc ccaaacatat 360
   cagtgaacaa tgacaagatc ataaagaaca gtatcatatt attatttagt cgcttttaca 420
   gtggcaagcc aattttgaaa tatctcattt aaaactcaga cccaattcac tgagttatac 480
50 ttttaatatg ttctcagca cactatttcc catgcattaa atatgataaa ataactctatc 540
   actgccatc ggtcttgtaa aaaggaagtc tgaatacaga gccacaaca ctaaaattgt 600
   ttttctagct acaaagtata gcatcatcaa cacagacacg atttggactc cctgacaggt 660
   ggattggaaa acggtgttta aagagaagag aacattttta cataaatgtc attaagaatc 720
   ccaaaggcct tatttgtcac caccgtcccg

```

55 <210> 32  
 <211> 1620  
 <212> DNA  
 <213> homo sapiens

60 &lt;400&gt; 32

```

gcaattcccc cctcccacta aacgactccc agtaattatg tttacaaccc attggatgca 60
gtgcagccat tcataagaac cttggtgccc cagaaaaaat tgtccttttt ggtaccacaa 120
65 ctgaggtctt ttggaagata atgtagaaaa ccactaccta ttgaaggcct gttttggcta 180

```

-14-

atctgtgcaa actctgatga tacctgcctt atgtggatgc ttttccacac tgcctttcatt 240  
 tttaagtata aagacttaga aaactagaat aatgctttta caaataatta aaagtagtg 300  
 atgttctggg ttttttcctt ctttttagaa cccgcctcc atttaaaaaa ttaaaaaaaa 360  
 aaaaaaact tttaacattt aaaaaataaa aattaacaaa atttcaactta ttccaggaca 420  
 5 cgctggcatt tggactcaat gaaaaggga cctaagaaa ataaggctga ctgaatgtt 480  
 tccataattt tcacacaata acagtccctt tctatccagc ttgccttcca tttatctcta 540  
 ggggttagctt ttccaggcaac atccttggtc attgcccaga aagtacctga gctatcagt 600  
 attggaatgg cacaggaaac cgaatcacat ggggtgccctc cccttggtt tcaagtatct 660  
 tggagtgtg caaaaaatt aggtcatgcc ttcagtgtct tgttctttaa acctaccctt 720  
 10 tgacaatcag gtgctaata ttgtatacta ttaaaaccag cacataagta ttgtaaatgt 780  
 gtgttcctcc taggttgga gaaatgtctt tccttctatc tgggtcctgt taaagcgggt 840  
 gtcagtgtg tcttttcacc tgcatttgtg aattaataga attgggggga gaggaaatga 900  
 tgatgtcaat taagtttcag gtttgcatg atcatcatc tcatgatata tctcactttg 960  
 tgcgaatct gcccttatcg taagaacaag tttcagaatt ttccctccac tatacgaact 1020  
 15 cagtattatg tttacaatcc attggatgag tgcagatta taagaccttg gtgcccagaa 1080  
 aaatctgtcc tttttggtac caaacctgag gtcttttggga agataatgta gaaaaccact 1140  
 acctatgaa ggcctgtttt ggctaactct tgcaaacctc gatgatacct gcttatgtgg 1200  
 attcctttcc acactgcttt catttttaag tataaagact tagaaaacta gaataatgct 1260  
 tttacaata attaaaagta tgtgatgttc tgggtttttt ccttctttt agaaccctgt 1320  
 20 atttaacaa gcccttcttt taagtcttgt ttgaaattta agtctcagat cttctggata 1380  
 ccaaatcaaa aacccaacgc gtaaaacagg gcagtatgtg tgttccaat tttaaaaagc 1440  
 tttatgtata ctctataaat atagatgcat aaacaacact tccccttgag tagcacatca 1500  
 acatacagca ttgtacatta caatgaaaat gtgtaactta agggatttat atatataaat 1560  
 25 acatatatac ctttgaacc tttatactgt aaataaaaaa gttgctttag tcaaaaaaaa 1620  
  
 <210> 33  
 <211> 2968  
 <212> DNA  
 <213> homo sapiens  
 30  
 <400> 33  
  
 gaaaaagtag aaggaaacac agttcatata gaagtaaaag aaaaccctga agaggaggag 60  
 gaggaggaag aagggaaga agaagatgaa gaaagtgaag aggaggagga agaggaggga 120  
 35 gaaagtgaag gcagtgaagg tgatgaggaa gatgaaaagg tgtcagatga gaaggattca 180  
 ggggaagacat tagataaaaa gccaaagtaa gaaatgagct cagattctga atatgactct 240  
 gatgtgatc ggactaaaga agaaagggtc tatgacaaag caaaacggag gattgagaaa 300  
 cggcgacttg aacatagtaa aaatgtaaac accgaaaagc taagagcccc tattatctgc 360  
 gtacttgggc atgtggacac aggggaagaca aaaattctag ataagctccg tcacacacat 420  
 40 gtacaagatg gtgaagcagg tggatcaca caacaaattg gggccacca tgttctctt 480  
 gaagctatta atgaacagac taagatgatt aaaaattttg atagagagaa tgtacggatt 540  
 ccaggaaatgc taattattga tactcctggg catgaatctt tcagtaatct gagaaataga 600  
 ggaagctctc tttgtgacat tgccatttta gttgttgata ttatgcatgg tttggagccc 660  
 cagacaattg agtctatcaa ccttctcaaa tctaaaaaat gtcccttcat tgttgactc 720  
 45 aataagattg ataggttata tgattggaaa aagagtctc actctgatgt ggctgtact 780  
 ttaaagaagc agaaaaagaa tacaaaagat gaatttgagg agcagacaaa ggctattatt 840  
 gtgaatttg cacagcaggg tttgaatgct gctttgttt atgagaataa agatccccgc 900  
 acttttgtgt ctttggtaac tacctctgca cactctggtg atggcatggg aagtctgatc 960  
 taccttcttg tagagttaac tcagaccatg ttgagcaaga gacttgcaca ctgtgaagag 1020  
 50 ctgagagcac aggtgatgga ggttaaagct ctcccgggga tgggaccac tatagatgtc 1080  
 atcttgatca atggcggtt gaaggaaagg gatacaatca ttgttcttgg agtagaagg 1140  
 cccattgtaa ctgagattcg aggcctctc ttacctctc ctatgaagga attacgagt 1200  
 aagaaccagt atgaaaagca taaagaagta gaagcagctc agggggtaaa gattcttgg 1260  
 aaagacctgg agaaaacatt ggctggttta cccctccttg tggcttataa agaagatgaa 1320  
 55 atccctgttc ttaaagatga attgatccat gagttaaagc agacactaaa tgctatcaa 1380  
 ttagaagaaa aaggagtcta tgtccaggca tctacactgg gttcttttga agctctactg 1440  
 gaatttctga aaacatcaga agtgccctat gcaggaatta acattggccc agtgcataaa 1500  
 aaagatgtta tgaaggcttc agtgatgttg gaacatgacc ctgagtatgc agtaattttg 1560  
 gccttcgatg tgagaattga acgagatgca caagaaatgg ctgatagttt aggagttaga 1620  
 60 attttagtg cagaaattat ttatcattta tttagtgcct ttacaaaata tagacaagac 1680  
 tacaagaaac agaaacaaga agaatttaag cacatagcag tatttccctg caagataaaa 1740  
 atcctccctc agtacattt taattctcga gatccgatag tgatgggggt gacggtggaa 1800  
 gcaggtcagg tgaacaggg gacacccatg tgtgtcccaa gcaaaaattt tgttgacatc 1860  
 ggaatagtaa caagtattga aataaaccat aaacaagtgg atgttgcaa aaggagaca 1920  
 65 gaagtttgtg taaaaataga acctatccct ggtgagtcac ccaaaatgtt tggaagacat 1980

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509  
510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800  
801  
802  
803  
804  
805  
806  
807  
808  
809  
810  
811  
812  
813  
814  
815  
816  
817  
818  
819  
820  
821  
822  
823  
824  
825  
826  
827  
828  
829  
830  
831  
832  
833  
834  
835  
836  
837  
838  
839  
840  
841  
842  
843  
844  
845  
846  
847  
848  
849  
850  
851  
852  
853  
854  
855  
856  
857  
858  
859  
860  
861  
862  
863  
864  
865  
866  
867  
868  
869  
870  
871  
872  
873  
874  
875  
876  
877  
878  
879  
880  
881  
882  
883  
884  
885  
886  
887  
888  
889  
890  
891  
892  
893  
894  
895  
896  
897  
898  
899  
900  
901  
902  
903  
904  
905  
906  
907  
908  
909  
910  
911  
912  
913  
914  
915  
916  
917  
918  
919  
920  
921  
922  
923  
924  
925  
926  
927  
928  
929  
930  
931  
932  
933  
934  
935  
936  
937  
938  
939  
940  
941  
942  
943  
944  
945  
946  
947  
948  
949  
950  
951  
952  
953  
954  
955  
956  
957  
958  
959  
960  
961  
962  
963  
964  
965  
966  
967  
968  
969  
970  
971  
972  
973  
974  
975  
976  
977  
978  
979  
980  
981  
982  
983  
984  
985  
986  
987  
988  
989  
990  
991  
992  
993  
994  
995  
996  
997  
998  
999  
1000

-15-

5 tttgaagcta cagatattct tgttagtaag atcagccggc agtccattga tgcactcaaa 2040  
 gactgggttca gagatgaaat gcagaagagt gactggcagc ttattgtgga gctgaagaaa 2100  
 gtatttgaaa tcatctaatt ttttcacatg gagcaggaac tggagtaa at gcaataactgt 2160  
 gttgtaatat cccaacaaaa atcagacaaa aaatggaaca gacgtatttg gacactgatg 2220  
 gacttaagta tggaaggaag aaaaataggt gtataaaatg ttttccatga gaaaccaaga 2280  
 aacttacact ggtttgacag tggtcagtta catgtcccca cagttccaat gtgcctgttc 2340  
 actcacctct cccttcccca acccttctct acttggtctg tgttttaaaag tttgccttc 2400  
 cccaaatttg gatttttatt acagatctaa agctctttcg attttatact gattaaatca 2460  
 gtactgcagt atttgattaa aaaaaaaaaa gcagattttg tgattcttgg gacttttttg 2520  
 10 acgtaagaaa tacttcttta tttatgcata ttcttccac agtgattttt ccagcattct 2580  
 tctgccatat gccttttaggg cttttataaa atagaaaatt aggcattctg atatttcttt 2640  
 agctgctttg tgtgaaacca tgggtgtaaaa gcacagctgg ctgcttttta ctgcttgtgt 2700  
 agtcacgagt ccattgtaat catcacaatt ctaaaccaaa ctaccaataa agaaaacaga 2760  
 catccaccag taagcaagct ctgttaggct tccatgggta gtggtagctt ctctcccaca 2820  
 15 agttgtctct ctaggacaag gaattatctt aacaaaactaa actatccatc acactacctt 2880  
 ggtatgccag cacctgggta acagtaggag attttataca ttaatctgat ctgtttaatc 2940  
 tgatcggttt agtagagatt ttatacat

&lt;210&gt; 34

20 &lt;211&gt; 6011

&lt;212&gt; DNA

&lt;213&gt; homo sapiens

&lt;400&gt; 34

25

30 acggggcgcc ggacgaccgc cacatcttat cctccacgcc ccaactcgac tccggagcggg 60  
 accgcccccg actccccctc gggccggcca ctcgaggagt gaggagagag gccgcggggc 120  
 cggcttgagc cgagcgcagc acccccgcgc ccccgcgcca gaagtttggg tgaaccggggc 180  
 tgccgggaga aacttttttc ttttttcccc ctctcccggg agagtctctg gaggaggagg 240  
 ggaactcccc cggcccaagg ctctggtggc cggggtcgcg cggccgcaga aggggcccggg 300  
 tccgcccgcg aggggagggc cccccgggga cccgagaggg ggggtgaggac cgcgggctgc 360  
 35 tgggtgcggcg gcggcagcgt gtgccccgcg caggggaggc gccgccccgc tcccgcccg 420  
 gctgcgagga ggaggcggcg gcggcgccag aggatgtact tgggtggcggg ggacaggggg 480  
 ttggccggct gcgggcacct cctggtctcg ctgctggggc tgctgctgct gccggcgcg 540  
 tccggcaacc gggcgctggt ctgctcgccc tgtgacgagt ccaagtgcga ggagccagg 600  
 aaccgccccg ggagcatcgt gcagggcgctc tgcggctgct gctacacgtg cgcagccag 660  
 40 gggaacgaga gctgcgcggc caccttcggg atttacgga cctgcgaccg ggggctgcgt 720  
 tgtgtcatcc gcccccgct caatggcgac tccctcaccg agtacgaagc gggcggttgc 780  
 gaagatgaga actggactga tgaccaactg cttggtttta aaccatgcaa tgaaaacctt 840  
 attgctggct gcaatataat caatgggaaa tgtgaatgta acaccattcg aacctgcagc 900  
 aatccctttg agtttccaag tcaggatatg tgcctttcag ctttaaagag aattgaagaa 960  
 45 gagaagccag attgctccaa ggcccgcgtg gaagtccagt tctctccacg ttgtcctgaa 1020  
 gattctgttc tgatcgaggg ttatgctcct cctggggagt gctgtccctt accagccgc 1080  
 tgcgtgtgca accccgcagg ctgtctgcgc aaagtctgcc agccgggaaa cctgaacata 1140  
 ctagtgtcaa aagcctcagg gaagccggga gagtgtctgt acctctatga gtgcaaacca 1200  
 gttttcggcg tggactgcag gactgtggaa tgccctactg ttcagcagac cgcgtgtccc 1260  
 50 ccggacagct atgaaactca agtcagacta actgcagatg gttgctgtac tttgccaa 1320  
 agatgcgagt gtctctctgg cttatgtggt ttcccgtgt gtgaggtggg atccactccc 1380  
 cgcatagtct ctctgtggcg tgggacacct ggaaagtgt gtgatgtctt tgaatgtgtt 1440  
 aatgatacaa agccagcctg cgtatttaac aatgtggaat attatgatgg agacatgttt 1500  
 cgaatggaca actgtcgggt ctgtcgatgc caagggggcg ttgccatctg cttcacccgc 1560  
 55 cagtgtggtg agataaactg cgagagtgat tacgtgcccg aaggagagtg ctgcccagtg 1620  
 tgtgaagatc cagtgtatcc ttttaataat cccgctggct gctatgcaa tggcctgatc 1680  
 cttgccacg gagaccggtg gcgggaagac gactgcacat tctgccagtg cgtcaacggg 1740  
 gaacgccact gcgttgcgac cgtctgcgga cagacctgca caaacctgt gaaagtgcct 1800  
 60 ggggagtggt gccctgtgtg cgaagaacca accatcatca cagttgatcc acctgcatgt 1860  
 ggggagttat caaactgcac tctgacacgg aaggactgca ttaatgggtt caaacggat 1920  
 cacaatgggt gtccgacctg tcagtgcata aacacccagg aactatgttc agaactgaaa 1980  
 caaggctgca ccttgaactg tcccttcggg ttccctactg atgcccacaa ctgtgagatc 2040  
 tgtgagtgcc gcccaaggcc caagaagtgc agaccataa tctgtgacaa gtattgtcca 2100  
 cttggattgc tgaagaataa gcacggctgt gacatctgtc gctgtaagaa atgtccagag 2160  
 65 ctctcatgca gtaagatctg ccccttgggt ttccagcagg acagtcaagg ctgtcttattc 2220

-16-

	tgcaagtgca	gagaggcctc	tgcttcagct	gggccaccca	tctgtcggg	cacttgctc	2280
	accgtggatg	gtcatcatca	taaaaatgag	gagagctggc	acgatgggtg	ccgggaatgc	2340
	tactgtctca	atggacggga	aatgtgtgcc	ctgatcacct	gcccggtgcc	tgctctgggc	2400
	aacccaccca	ttcacccctg	acagtgtctg	ccatcatgtg	cagatgactt	tgtgggtgcag	2460
5	aagccagagc	tcagtactcc	ctccatttgc	cacgcccctg	gaggagaata	ctttgtggaa	2520
	ggagaaacgt	ggaacattga	ctcctgtact	cagtgcacct	gccacagcgg	acgggtgctg	2580
	tgtgagacag	aggtgtgccc	accgctgtct	tgccagaacc	cctcacgcac	ccaggattcc	2640
	tgctgcccac	agtgtacaga	tcaacctttt	cggccttcct	tgtcccgcaa	taacagcgta	2700
	cctaattact	gcaaaaatga	tgaaggggat	atattcctgg	cagctgagtc	ctggaagcct	2760
10	gacgtttgta	ccagctgcct	ctgcattgat	agcgttaatta	gctgtttctc	tgagtctctg	2820
	ccttctgtat	cctgtgaaag	acctgtcttg	agaaaaggcc	agtgttgctc	ctactgcata	2880
	aaagacacaa	ttccaaagaa	ggtggtgtgc	cacttcagtg	ggaaggccta	tgccgacgag	2940
	gagcgggtgg	accttgacag	ctgcacccac	tgctactgcc	tgcaaggcca	gacctctctg	3000
	tcgaccgtca	gctgcccccc	tctgcccctg	gttgagccca	tcaacgtgga	aggaagttgc	3060
15	tgcccaatgt	gtccagaaat	gtatgtccca	gaaccaacca	atatacccat	tgagaagaca	3120
	aaccatcgag	gagaggttga	cctggagggt	ccctctgggc	ccacgcctag	tgaaaatgat	3180
	atcgtccatc	tccttagaga	tatgggtcac	ctccaggtag	attacagaga	taacaggctg	3240
	caccaaatgt	aagattcttc	actggactcc	attgctcag	ttgtggttcc	cataattata	3300
	tgctctctta	ttataaatgc	attcctattc	atcaatcaga	agaaacagtg	gataccactg	3360
20	ctttgctggg	atcgaaacac	aactaagcct	tcttctttaa	ataatcagct	agtatctctg	3420
	gactgcaaga	aaggaaccag	agtcagggtg	gacagttccc	agagaatgct	aagaattgca	3480
	gaaccagatg	caagattcag	tggtctctac	agcatgcaaa	aacagaacca	tctacaggca	3540
	gacaatttct	accaaacagt	gtgaagaaag	gcaactagga	tgaggtttca	aaagacggaa	3600
	gacgactaaa	tctgctctaa	aaagtaaaact	agaatttggtg	cacttgctta	gtggattgta	3660
25	ttggtttgtg	acttgatgta	cagcgtctaa	accttactgg	gatgggtctc	gtctacagca	3720
	atgtgcagaa	caagcattcc	cacttttctc	caagataact	gaccaagtg	tttcttagaa	3780
	ccaaagtttt	taaaagtgtc	aagatatatt	tgctgtgaag	atagctgtag	agatatttgg	3840
	gggtggggaca	gtgagtttgg	atggggaaag	gggtggggag	gtggtgttgg	gaagaaaaat	3900
	tggtcagctt	ggctcgggga	gaaacctggg	aacataaaaag	cagttcagtg	gcccagaggt	3960
30	tatttttttc	ctattgctct	gaagactgca	ctggttgctg	caaagctcag	gcctgaatga	4020
	gcaggaaaca	aaaaaggcct	tgcgacccag	ctgccataac	caccttagaa	ctaccagacg	4080
	agcacatcag	aaccttttga	cagccatccc	aggctctaaag	ccacaagttt	cttttctata	4140
	cagtcacaca	tgcataggg	agtgaagaa	ccagagaaat	gcatagcgg	catttctcta	4200
	aagcgggtta	ttaaggatac	atacagttac	actttttgct	gcttttattt	tcttccaagc	4260
35	caatcaatca	gccagttcct	agcagagtca	gcacatgaac	aagatctaag	tcatttcttg	4320
	atgtgagcac	tgagcgtttt	tttttttaca	acgtgacagg	aagaggagg	agagggtgac	4380
	gaacaccagg	catttccagg	ggctatatatt	cactgtttgt	tggtgttttg	ttctgttata	4440
	ttgttggttg	ttcatagttt	ttgttgaagc	tctagcttaa	gaagaaactt	tttttaaaaa	4500
	gactgttttg	ggattctttt	tctttattat	atactgattc	tacaaaatag	aaactacttc	4560
40	attttaattg	tattattatc	aagcaccttt	gttgaagctc	aaaaaaaaat	atgcctcttt	4620
	aaacttttag	aattatagga	gtatttatgt	actatcttta	tgcttcaaaa	aacaaaagta	4680
	tttgtgtgca	tgtgtatata	atatatatat	atacatatat	atttatacac	atacaattta	4740
	tgtttttctg	ttgaatgtat	ttttatgaga	ttttaaccag	aacaaaaggc	gataaacagg	4800
	cattccatag	cagtgccttt	gatcacttac	aaattttttg	aataacacaa	aatctcattc	4860
45	tacctgcagt	ttaattggaa	agatgtgtgt	gtgagagtat	gtatgtgtgt	gtgtgtgtgt	4920
	gtgtgtgcgc	gcgcacgcac	gccttgagca	gtcagcattg	cacctgctat	ggagaagggg	4980
	attccttttat	taaaatcttc	ctcatttgga	tttgctttca	gttggttttc	aatttgctca	5040
	ctggccagag	acattgatgg	cagttcttat	ctgcatcact	aatcagctcc	tggaattttt	5100
	tttttttttt	tcaacaatg	gtttgaaaca	actactggaa	tattgtccac	aataagctgg	5160
50	aagtttggtg	tagtatgcct	caaatataac	tgactgtata	ctatagtgg	aacttttcaa	5220
	acagccctta	gcacttttat	actaatatac	ccatttgctg	attgagtttt	cttttaaaaa	5280
	tgcttggttg	gaaagacaca	gataccagct	atgcttaacg	tgaaaagaaa	atgtgttctg	5340
	ttttgtaaag	gaactttcaa	gtattgttgt	aaataacttg	acagaggttg	ctgaacttta	5400
	aaaaaaatta	atattattat	ataatgaact	aatttattaa	tctgaagatt	aaccattttt	5460
55	ttgtcttaga	atatcaaaaa	gaaaaagaaa	aagtggttct	agctgtttgc	atcaaggaaa	5520
	aaaaagattt	attatcaagg	ggcaatattt	ttatcttttc	caaaaataaa	ttgttaattga	5580
	tacattacaa	aaatagattg	acatcagcct	gattagtata	aattttgttg	gtaattaatc	5640
	cattcctggc	ataaaaaagc	tttatcaaaa	aaaattgtag	atgcttgctt	tttgtttttt	5700
	caatcatggc	catattatga	aaataactaac	aggatatagc	acaaggtgta	aattttttta	5760
60	ttattatttt	aaagatatga	tttatcctga	gtgctgtatc	tattactctt	ttactttggg	5820
	tctgtgtgtg	ctcttgtaaa	agaaaaatat	aatttctctga	agaataaaaat	agatatatgg	5880
	cacttgaggt	gcacatagct	tctacagttt	gtttttgttt	tcttcaaaaa	agctgtaaga	5940
	gaattatctg	caacttgatt	cttggcagga	aataaacatt	ttgagttgaa	atcaaaaaaa	6000
65	aaaaaaaaaa	a					

<400> 35

10	Met 1	Tyr	Leu	Val	Ala 5	Gly	Asp	Arg	Gly	Leu 10	Ala	Gly	Cys	Gly	His 15	Leu
	Leu	Val	Ser	Leu 20	Leu	Gly	Leu	Leu	Leu 25	Leu	Pro	Ala	Arg	Ser 30	Gly	Thr
	Arg	Ala	Leu 35	Val	Cys	Leu	Pro	Cys 40	Asp	Glu	Ser	Lys	Cys 45	Glu	Glu	Pro
15	Arg	Asn 50	Arg	Pro	Gly	Ser	Ile 55	Val	Gln	Gly	Val	Cys 60	Gly	Cys	Cys	Tyr
	Thr 65	Cys	Ala	Ser	Gln 70	Gly	Asn	Glu	Ser	Cys 75	Gly	Thr	Phe	Gly	Ile 80	
	Tyr	Gly	Thr	Cys	Asp 85	Arg	Gly	Leu	Arg	Cys 90	Val	Ile	Arg	Pro	Pro 95	Leu
20	Asn	Gly	Asp	Ser 100	Leu	Thr	Glu	Tyr	Glu 105	Ala	Gly	Val	Cys	Glu 110	Asp	Glu
	Asn	Trp	Thr	Asp 115	Asp	Gln	Leu	Leu 120	Gly	Phe	Lys	Pro	Cys 125	Asn	Glu	Asn
	Leu	Ile 130	Ala	Gly	Cys	Asn 135	Ile	Asn	Gly	Lys	Cys 140	Glu	Cys	Asn	Thr	
25	Ile 145	Arg	Thr	Cys	Ser 150	Asn	Pro	Phe	Glu	Phe 155	Pro	Ser	Gln	Asp 160	Met	Cys
	Leu	Ser	Ala	Leu 165	Lys	Arg	Ile	Glu	Glu 170	Lys	Pro	Asp	Cys	Ser 175	Lys	
	Ala	Arg	Cys	Glu 180	Val	Gln	Phe	Ser	Pro 185	Arg	Cys	Pro	Glu	Asp 190	Ser	Val
30	Leu	Ile	Glu 195	Gly	Tyr	Ala	Pro	Pro 200	Gly	Glu	Cys	Cys 205	Pro	Leu	Pro	Ser
	Arg	Cys 210	Val	Cys	Asn	Pro	Ala 215	Gly	Cys	Leu	Arg	Lys 220	Val	Cys	Gln	Pro
	Gly 225	Asn	Leu	Asn	Ile 230	Leu	Val	Ser	Lys	Ala	Ser 235	Gly	Lys	Pro	Gly	Glu
40	Cys	Cys	Asp	Leu 245	Tyr	Glu	Cys	Lys	Pro	Val 250	Phe	Gly	Val	Asp 255	Cys	Arg
	Thr	Val	Glu 260	Cys	Pro	Thr	Val	Gln 265	Gln	Thr	Ala	Cys	Pro	Pro 270	Asp	Ser
	Tyr	Glu	Thr 275	Gln	Val	Arg	Leu	Thr 280	Ala	Asp	Gly	Cys 285	Cys	Thr	Leu	Pro
45	Thr 290	Arg	Cys	Glu	Cys	Leu	Ser 295	Gly	Leu	Cys	Gly	Phe 300	Pro	Val	Cys	Glu
	Val 305	Gly	Ser	Thr	Pro	Arg 310	Ile	Val	Ser	Arg	Gly 315	Asp	Gly	Thr	Pro	Gly
	Lys	Cys	Cys	Asp 325	Val	Phe	Glu	Cys	Val	Asn 330	Asp	Thr	Lys	Pro	Ala 335	Cys
50	Val	Phe	Asn 340	Asn	Val	Glu	Tyr	Tyr 345	Asp	Gly	Asp	Met	Phe	Arg 350	Met	Asp
	Asn	Cys	Arg 355	Phe	Cys	Arg	Cys	Gln 360	Gly	Gly	Val	Ala 365	Ile	Cys	Phe	Thr
	Ala	Gln 370	Cys	Gly	Glu	Ile	Asn 375	Cys	Glu	Arg	Tyr	Tyr 380	Val	Pro	Glu	Gly
55	Glu 385	Cys	Cys	Pro	Val	Cys 390	Glu	Asp	Pro	Val	Tyr 395	Pro	Phe	Asn	Asn	Pro
	Ala	Gly	Cys	Tyr 405	Ala	Asn	Gly	Leu	Ile	Leu 410	Ala	His	Gly	Asp 415	Arg	Trp
	Arg	Glu	Asp 420	Asp	Cys	Thr	Phe	Cys	Gln 425	Cys	Val	Asn	Gly	Glu 430	Arg	His
60	Cys	Val	Ala 435	Thr	Val	Cys	Gly	Gln 440	Thr	Cys	Thr	Asn	Pro	Val 445	Lys	Val
	Pro	Gly	Glu	Cys	Cys	Pro	Val	Cys	Glu	Glu	Pro	Thr	Ile	Ile	Thr	Val

65

-19-

Thr Lys Pro Ser Ser Leu Asn Asn Gln Leu Val Ser Val Asp Cys Lys  
 980 985 990  
 Lys Gly Thr Arg Val Gln Val Asp Ser Ser Gln Arg Met Leu Arg Ile  
 995 1000 1005  
 5 Ala Glu Pro Asp Ala Arg Phe Ser Gly Phe Tyr Ser Met Gln Lys Gln  
 1010 1015 1020  
 Asn His Leu Gln Ala Asp Asn Phe Tyr Gln Thr Val  
 1025 1030 1035  
 10  
 <210> 36  
 <211> 716  
 <212> DNA  
 <213> homo sapiens  
 15  
 <400> 36  
 20 gcagtagctg gagtgtcctg caggggggaaa gcgaaccggg ccctgaagtc cggggcagtc 60  
 acccggggct cctggggcgc tctgcccggc tggggctgag cagcgatcct gctttgtccc 120  
 agaagtccag agggatcagc cccagaacac accctcctcc cggggacgcc gcagctttct 180  
 ggaggctgag gaaggcatga agagtgggct ccacctgctg gccgactgag aaaagaattt 240  
 ccagaaactcg gtcctatttt acagattgag aaactatggt tcaagaagag aggacggggc 300  
 ttgagggaat ctctgattc tccttatatg acctcaaact gaccatacta aacagtgtag 360  
 25 aagggtcttt taaggctcta aatgtcaggg tctcccatcc cctgatgcct gacttgtaca 420  
 gtcagtgtgg agtagacggg ttctccacc caggggttgac tcagggggat gatctgggtc 480  
 ccattctggg cttaagaccc caaacaaggg ttttttcagc tccaggatct ggagcctcta 540  
 tctggttagt gtcgtaacct ctgtgtgcct cccgttaccc catctgtcca gtgagctcag 600  
 ccccatcca cctaacaggg tggccacagg gattactgag gggttaagacc ttagaactgg 660  
 30 gtctagcacc cgataagagc tcaataaatg ttgttccttt ccacatcaaa aaaaaa  
 <210> 37  
 <211> 395  
 <212> DNA  
 35 <213> homo sapiens  
 <400> 37  
 40 ccaatacttc attcttcatt ggtggagaag attgtagact tctaagcatt ttccaaataa 60  
 aaaagctatg atttgatttc caacttttaa acattgcatg tcctttgccca tttactacat 120  
 tctccaaaaa aaccttgaaa tgaagaaggc cacccttaaa atacttcaga ggctgaaaat 180  
 atgattatta cattggaatc ctttagccta tgtgatattt ctttaacttt gcactttcac 240  
 gcccgtaaaa accaaagtca gggtaaccaa tgtcatttta caaatgtta aaaccctaata 300  
 tgcagttcct tttttaaat attttaaaga ttacttaaca acattagaca gtgcaaaaaa 360  
 45 agaagcaagg aaagcattct taattctacc atcct  
 <210> 38  
 <211> 134  
 <212> DNA  
 50 <213> homo sapiens  
 <400> 38  
 55 ccctcgagcg gccgcccggg caggtacttt taccaccgaa ttgttcactt gactttaaga 60  
 aaccataaa gctgcctggc tttcagcaac aggcctatca acaccatggg gactctccat 120  
 aagggaacc gtgt  
 <210> 39  
 <211> 644  
 60 <212> DNA  
 <213> homo sapiens  
 <400> 39  
 65 aagcctgttg tcatggggga ggtgggtggc cttgggtggc actggcggcc gaggtagagg 60

-20-

```

cagtggcgct tgagttggtc gggggcagcg gcagatttga ggcttaagca acttcttcog 120
gggaagagtg ccagtgcagc cactgttaca attcaagatc ttgatctata tccatagatt 180
ggaatattgg tgggccagca atcctcagac gcctcactta ggacaaatga ggaaactgag 240
gcttggtgaa gttacgaaac ttgtccaaaa tcacacaact tgtaaaagggc acagccaaga 300
5  ttcagagcca ggctgtaaaa attaaaatga acaaattacg gcaaagtttt aggagaaaga 360
  aggatgttta tgttccagag gccagtgcgc cacatcagtg gcagacagat gaagaaggcg 420
  ttcgaccggg aaaaatgtagc ttcccgggta agtaccttgg ccatgtagaa gttgatgaat 480
  caagaggaat gcacatctgt gaagatgctg taaaaagatt gaaagctgaa aggaagttct 540
  tcaaaggctt ctttggaaaa actggaaaaga aagcagttaa agcagtttct gtgggtctaa 600
10  gcagatggac tcagaggttg tggatgaaaa actaaggacc tcat

<210> 40
<211> 657
<212> DNA
15  <213> homo sapiens

<400> 40

ctttttgttt gggttttcca atgtagatgt ctcagtgaag tgtgcagata tactttgttc 60
20  cttatatggg caccagtgtt aattatggac aaatacatta aaacaagggg tcttggccca 120
  gctcccatc taatctcttt gatactcttg gaatctaagt ctgaggagcg atttctgaat 180
  tagccagtgt tgtaccaact ttctgttagg aattgtatta gaataacctt tctttttcag 240
  acctgtcag tgagacatct tggggaatga agtaggaaa tagacatttg gtggaaaaac 300
  agcaaaatga gaacattaaa aagactcatt caagtatgag tataaagggc atggaaattc 360
25  tggtcctttg agcaaaatga gaagaaaaaa ttctgctcag cagtattcac tgtgttaaga 420
  ttttttgttt tttacacgaa tggaaaaatg atgtgtaagt ggtatagatt ttaatcagct 480
  aacagtcact ccagagattt tgatcagcac caattcctat agtagtaagt atttaaaagt 540
  taagaaatac tactacattt aacattataa agtagagttc tggacataac tgaaaaattag 600
  atgtttgctt caatagaaat ttgttcccac ttgtattttc aacaaaatta tcggaac
30

<210> 41
<211> 1328
<212> DNA
<213> homo sapiens
35

<400> 41

acaattttta aataactagc aattaatcac agcatatcag gaaaaagtac acagtgaagt 60
ctgggttagt tttgtaggct cattatgggt agggctcgta agatgtatat aagaacctac 120
40  ctatcatgct gtatgtatca ctcatcccat ttctatgttc catgcatact cgggcatcat 180
  gctaatatgt atccttttaa gcactctcaa ggaaacaaaa gggcctttta tttttataaa 240
  ggtaaaaaaa attccccaaa tattttgcac tgaatgtacc aaaggtgaag ggacattaca 300
  atatgactaa cagcaactcc atcacttgag aagtataata gaaaatagct tctaaatcaa 360
  acttccttca cagtgcctgt tctaccacta caaggactgt gcatctaagt aataattttt 420
45  taagattcac tatatgtgat agtatgatat gcatttatit aaaatgcatt agactctctt 480
  ccacccatca aatactttac aggatggcat ttaatacaga tatttcgtat tccccccact 540
  gcttttttatt tgtacagcat cattaaacac taagctcagt taaggagcca tcagcaacac 600
  tgaagagatc agtagtaaga attccatttt ccctcatcag tgaagacacc acaaattgaa 660
  actcagaact atattttctaa gcctgcattt tccactgatc ataattttct tagtaattat 720
50  aagagacagt ttttctatgg catctccaaa actgcagac atcactagtc ttacttctgc 780
  ttaattttat gagaaggat tcttcatttt aattgctttt gggattactc cacatctttg 840
  tttatttctt gactaatcag attttcaata gagtgaagtt aaattggggg tcataaaaagc 900
  attggattga catatggttt gccagcctat ggggtttacag gcattgcca aacatttctt 960
  tgagatctat atttataagc agccatggaa ttccctattat gggatgttgg caatcttaca 1020
55  ttttatagag gtcatatgca tagttttcat aggtgttttg taagaactga ttgctctctt 1080
  gtgagtttaag ctatgtttac tactgggacc ctcaagagga ataccactta tgttacactc 1140
  ctgcactaaa ggcacgtact gcagtgtgaa gaaatgttct gaaaaagggg tatagaaatc 1200
  tggaaataag aaaggaagag ctctctgtat tctataattg gaagagaaaa aaagaaaaac 1260
  ttttaactgg aaatgttagt ttgtacttat tgatcatgaa tacaagtata tatttaattt 1320
60  tgaaaaaa

<210> 42
<211> 987
<212> DNA
65  <213> homo sapiens

```



-21-

&lt;400&gt; 42

```

5  aacagagact ggcacaggac ctcttcattg caggaagatg gtagtgtagg caggtaacat 60
   tgagctcttt tcaaaaaagg agagctcttc ttcaagataa ggaagtggta gttatggtgg 120
   taacccccgg ctatcagtcc ggatggttgc caccctcct gctgtaggat ggaagcagcc 180
   atggagtggg agggaggcgc aataagacac cctccacag agcttggcat catgggaagc 240
   tggttctacc tcttctggc tcctttgttt aaaggcctgg ctgggagcct tccttttggg 300
   tgtctttctc ttctccaacc aacagaaaag actgctcttc aaagggtggag ggtcttcatg 360
10 aaacacagct gccaggagcc caggcacagg gctggggggc tggaaaaagg agggcacaca 420
   ggaggaggga ggagctggta gggagatgct ggctttacct aaggctctga aacaaggagg 480
   gcagaatagg cagaggcctc tccgtcccag gccattttt gacagatggc gggacggaaa 540
   tgcaatagac cagcctgcaa gaaagacatg tgttttgatg acaggcagtg tggccgggtg 600
   gaacaagcac aggccttggg atccaatgga ctgaatcaga accctaggcc tgccatctgt 660
15 cagccgggtg acctgggtca attttagcct ctaaaagcct cagtctcctt atctgcaaaa 720
   tgaggcttgt gatacctgtt ttgaagggtt gctgagaaaa ttaaagataa ggggtatccaa 780
   aatagtctac ggccatacca cctgaacgt gcctaattct gtaagctaag cagggtcagg 840
   cctggttagt acctggatgg ggagagtatg gaaaacatac ctgcccgcag ttggagttgg 900
   actctgtctt aacagtagcg tggcacacag aaggcactca gtaaatactt gttgaataaa 960
20 tgaagtagcg atttgggtgtg aaaaaaa

```

&lt;210&gt; 43

&lt;211&gt; 956

&lt;212&gt; DNA

25 &lt;213&gt; homo sapiens

&lt;400&gt; 43

```

30  cggacgggtg ggcggacgcg tgggtgcagg agcaggggcg ctgccgactg cccaaccaa 60
   ggaaggagcc cctgagtcg cctgcgcctc catccatctg tcggccaga gccggcatcc 120
   ttgctgtct aaagccttaa ctaagactcc cgcccgggc tggccctgtg cagaccttac 180
   tcaggggatg tttacctggg gctcgggaag ggaggggaag gggccgggga gggggcacgg 240
   caggcgtgtg gcagccacac gcaggcgccc agggcgccca gggacccaaa gcaggatgac 300
   cagccacctc cagccactg cctccccga atgcatttgg aaccaaagtc taaactgagc 360
35  tcgcagcccc cgcgcctcc ctccgcctcc catcccgtt agcgtctgtg acagatggac 420
   gcaggccctg tccagccccc agtgcgctcg ttccggtccc cacagactgc cccagccaac 480
   gagattgtct gaaaccaagt caggccagggt gggcggacaa aagggccagg tgcggcctgg 540
   ggggaacgga tgctccgagg actggactgt tttttcaca catcgttgcc gcagcgggtg 600
   gaaggaaaagg cagatgtaaa tgatgtgttg gtttacaggg tataattttg ataccttcaa 660
40  tgaattaatc cagatgtttt acgcaaggaa ggacttacc agtattactg ctgctgtgct 720
   tttgatctct gcttacggt caagaggcgt gtgcaggccg acagtccgtg accccatcac 780
   tcgcagggacc aagggggagg ggactgctgg ctcacgcccc gctgtgtcct cctccctc 840
   ccttccttgg gcagaatgaa ttcatgctg attctgtggc cgccatctgc gcagggtgg 900
   ggtattctgt catttacaca cgtcgttcta attaaaaagc gaattatact ccaaaa

```

&lt;210&gt; 44

&lt;211&gt; 536

&lt;212&gt; DNA

&lt;213&gt; homo sapiens

50

&lt;400&gt; 44

```

55  aaataaacac ttccataaca ttttgttttc gaagtctatt aatgcaatcc cacttttttc 60
   cccctagttt cttaatgtta aagagagggg aaaaaaggct caggatagtt ttcacctcac 120
   agtgtagct gtcttttatt ttactcttgg aaatagagac tccattaggg ttttgacatt 180
   ttgggaaccc agttttacca ttgtgtcagt aaaacaataa gatagtttga gagcatatga 240
   tctaaataaa gacatttgaa gggtagtttt gaattctaaa agtaggtaat agccaaatag 300
   cattctcatc ccttaacaga caaaaactta tttgtcaaaa gaattagaaa aggtgaaaaat 360
   attttttcca gatgaaactt gtgccacttc caattgacta atgaaataca aggagacaga 420
60  ctggaaaaag tgggttatgc caccttttaa accctttctg gtaaataatta tggtagctaa 480
   aggggtggtt ccccgccacc tggacctgga caggtagggg tccgtgggta accagt

```

&lt;210&gt; 45

&lt;211&gt; 1630

65

&lt;212&gt; DNA

-22-

&lt;213&gt; homo sapiens

&lt;400&gt; 45

```

5  ggggaggggac gagtatggaa ccctgaaggt agcaagtgca ggcactggcc tgaccatccg 60
   gctccctggg caccaagtcc caggcaggag cagctgtttt ccatcccttc ccagacaagc 120
   tctattttta tcacaatgac ctttagagag gtctcccagg ccagctcaag gtgtcccact 180
   atccctctctg gagggaagag gcaggaaaat tctccccggg tcctgtcat gctactttct 240
   ccatcccagt tcagactgtc caggacatct tatctgcagc cataagagaa ttataaggca 300
10  gtgatttccc ttagggccag gacttgggccc tccagctcat ctgttccttc tggggccatt 360
   catggcagggt tctgggctca aagctgaact ggggagagaa gagatacaga gctaccatgt 420
   gactttacct gattgccctc agtttggggg tgcttattgg gaaagagaga gacaaagagt 480
   tacttgttac gggaaatatg aaaagcatgg ccaggatgca tagaggagat tctagcaggg 540
   gacaggattg gctcagatga cccctgaggg ctcttccagt cttgaaatgc attccatgat 600
15  attaggaagt cggggggtggg ttgtgtgtgt gggctagtgt gggttgaatt tagggggccga 660
   tgagcttggg tacgtgagca ggggtgttaag ttaggggtctg cctgtatttc tgggtccctt 720
   ggaaatgtcc ccttcttcag tgtcagacct cagtcaccagt gtccatatcg tgcccagaaa 780
   agtagacatt atcctgcccc atccttcccc cagtgcactc tgacctagct agtgccctgg 840
   gccagtgac ctggggggagc ctggctgcag gccctcactg gttccctaaa ccttgggtggc 900
20  tgtgattcag gtcccagggg gggactcagg gaggaatatg gctgagttct gtagtttcca 960
   gagtggctg gtagagcctt cttagaggttc agaattattg cttcaggatc agctgggggt 1020
   atggaattgg ctgaggatca aacgtatgta ggtgaaagga taccaggatg ttgtctaaagg 1080
   tgagggacag tttgggtttg ggacttacca ggggtgatgt agatctggaa cccccaagt 1140
   aggtgggagg gagttaaggt cagtatggaa gatagggttg ggacaggggtg ctttgggaatg 1200
25  aaagagtgc cttagagggc tccttggggc tcaggaatgc tcctgctgct gtgaagatga 1260
   gaaggtgctc ttactcagtt aatgatgagt gactatattt accaaagccc ctacctgctg 1320
   ctgggtccct ttagcacag gagactgggg ctaaggggccc ctcccaggga agggacacca 1380
   tcaggcctct ggctgaggca gtagcataga ggatccattt ctacctgcat ttcccagagg 1440
   actagcagga ggcagccttg agaaaccggc agttcccaag ccagcgccctg gctgttctct 1500
30  cattgtcact gccctctccc caacctctcc tctaaccac tagagattgc ctgtgtcctg 1560
   cctcttgct cttgtagaat gcagctctgg ccctcaataa atgcttctctg cattcatctg 1620
   caaaaaaaaa

```

&lt;210&gt; 46

35 &lt;211&gt; 169

&lt;212&gt; DNA

&lt;213&gt; homo sapiens

&lt;400&gt; 46

```

40  tcttttgcct ttagcttttt atttttgtat taacaggagt cttattacac ataggctctga 60
   taaaaactgg ttatgatctt cagtctgatt ccagtgtctg ataactagat aacgtatgaa 120
   ggaaaaacga cgacgaacaa aaaagtaagt gcttgggaaga cttagttaga

```

&lt;210&gt; 47

&lt;211&gt; 769

&lt;212&gt; DNA

&lt;213&gt; homo sapiens

50 &lt;400&gt; 47

```

   tgcaggtcat atttactatc ggcaataaaa ggaagcaaag cagtattaag cagcggtgga 60
   atttgtcgct ttcacttttt ataaagtgtc acataaaatg tcatatttcc aaatttaaaa 120
   acataactcc agttcttacc atgagaacag catggtgatc acgaaggatc ttcttgaaaa 180
55  aaacaaaaac aaaaaacaaa aacaatgatc tcttctgggt atcacatcaa atgagataca 240
   aaggtgtact aggcaatctt agagatctgg caacttattt tatatataag gcatctgtga 300
   ccaagagacg ttatgaatta aatgtacaaa tgtattatgt ataaatgtat taaatgcaag 360
   cttcatataa tgacaccaat gtctctaagt tgctcagaga tcttgactgg ctgtggccct 420
   ggccagctcc tttcctgata gtctgattct gccttcata ataggcagct cctgatcatc 480
60  catgccagtg aatgagaaaa caagcatgga atataaaac tttaacatta aaaaatgttt 540
   tattttgtaa taaaatcaaa tttccatttg aaaccttcaa aaactttgca gaatgaggtt 600
   ttgatataat tgtacaagta gtacctctt agtgcaagaa aacatcatta tttctgtctg 660
   cctgcctttt tgtttttaa aatgaagact atcattgaaa caagtttgtc ttcagtatca 720
   ggacatgttg acggagagga aaggtaggaa agggtaggg atagaagcc

```

65

-23-

<210> 48  
 <211> 2529  
 <212> DNA  
 <213> homo sapiens

5

&lt;400&gt; 48

tttagttcat agtaatgtaa aaccatttgt ttaattctaa atcaaatcac tttcacaaca 60  
 gtgaaaatta gtgactgggt aagggtggcc actgtacata tcatcatttt ctgactgggg 120  
 10 tcaggacctg gtccatgtcc acaagggtgg caggaggagg gtggaggcta agaacacaga 180  
 aaacacacaa aagaaaggaa agctgccttg gcagaaggat gaggtgggtga gcttgccgag 240  
 ggatgggtggg aagggggctc cctgttgggg ccgagccagg agtcccaagt cagctctcct 300  
 gccttactta gctcctggca gaggtgagt ggggacctac gaggttcaaa atcaaatggc 360  
 atttggccag cctggcttta ctaacagggt cccagagtgc ctctgttggc tgagctctcc 420  
 15 tgggtcact ccatttcatt gaagagtcca aatgattcat tttcctacc acaacttttc 480  
 attattcttc tggaaaccca tttctgttga gtccatctga cttaagtcct ctctccctcc 540  
 actagtggg gccactgcac tgaggggggt cccaccaatt ctctctagag aagagacact 600  
 ccaggggccc ctgcaacttt gcggatttcc agaagtgat aaaaagagca ctcttgagt 660  
 ggtgcccgag aatgtttaa atctatcagg cacactataa agctgggtgg tttctcctac 720  
 20 caagtggatt cggcatatga accacctact caatacttta tattttgtct gtttaaaccac 780  
 tgaactctgg tgttgacagg tacaaggag aagagatggg gactgtgaag aggggagggc 840  
 ttccctcatc ttccctcaaga tctttgtttc cataaactat gcagtataa ttgagaaaaa 900  
 gcaatagatg gggcttccca ccatttgggt gttattgtct ggggttagcca ggagcagtgt 960  
 ggatggcaaa gtaggagaga gggccagagg aaagcccatc tccctccagc tttggggtct 1020  
 25 ccagaaagag gctggatttc tgggatgaag cctagaaggc agagcaagaa ctgttccacc 1080  
 aggtgaacag tccctactgc ttggtaccat agtccctcaa taagattcag aggaagaagc 1140  
 ttatgaaact gaaaatcaaa tcaaggtatt gggaagaata atttccctc gattccacag 1200  
 gagggaagac cacacaatat cattgtgctg gggctcccca aggcctgcc acctggcttt 1260  
 acaaatcatc aggggttgc tgcttggcag tcacatgctt cctgggtttt agcacacata 1320  
 30 caaggagttt tcagggaact ctatcaagcc ataccaaaat cagggtcaca tgtgggtttc 1380  
 ccctttcctt gcctcttcat aaaagacaac ttggcttctg aggatgggtg tcttttgcac 1440  
 gcagttgggc tgacctgaca aagccccagc tttcctgtgg caggttcttg gagaggatgc 1500  
 attcaagctt ctgcagccta ggggacaggc ctgcttgttc agttattact gcctcggagc 1560  
 tccaaatccc accaaagtc tgactccagg tcttccctaa tgcacagtag tcaagtctcag 1620  
 35 cttcggcagt attctcggct gtatgttctc tggcagagag aggcagatga acatagtttt 1680  
 agggagaaag ctgatgggaa acctgtgagt taagccacat gtctcaccag gaataattta 1740  
 tgccaggaaa ccagggaagt attcaagttg ttctctgagg ccaaagacac tgagcacagc 1800  
 ccagagccaa taaaagatct ttgagtctct ggtgaattca cgaaagtgaac ccagctttag 1860  
 ctactgcaat tatgattttt atgggacagc aatttcttgc atctctacag aggaagaaga 1920  
 40 gggggagtgg gaggggaagg aaagagaaca gagcggaact gggatttgaa aggggaacct 1980  
 ctctatctga ggagccccc ctggcttcag aagcaactta ccaagggtta tttaaagaca 2040  
 tgaaaatttc cagaaatacc atttgggtga tcccttgggt tctgtaatat taaactcagg 2100  
 tgaaattata ctctgacagt ttctctctt ctgctcttcc cctctgcaga gtcaggacct 2160  
 gcagaaactg ctgaaacaag atttcatggt gtcacccatg agagatgact caatgccaaag 2220  
 45 gcctgaagtt atagagtgt tacagcgggt gcgatattca ggggtcatcg ccaactgggtc 2280  
 tcgagttcca aagctctgat gaagaaacaa gactccttga tgtgttactg atccactga 2340  
 ttccaggagt caagattagc caggaagcca aacaccagga gttgggggtg cacgtacca 2400  
 gtccagagcc ctgccacgga tgtacgcagg agccagcat taggcaatca ggagccagaa 2460  
 50 catgatcacc agggccacaa ataggaagag gcgtgacagg aactgctcgt ccacatacct 2520  
 ggggtgtcc

<210> 49  
 <211> 1552  
 <212> DNA  
 <213> homo sapiens

55

&lt;400&gt; 49

tttttttttt tttttgattt ctgggacaat taagctttat ttttcatata tatatatatt 60  
 60 ttcatatata tatatacata catatataaa ggaaacaatt tgcaaattha cacactgac 120  
 aaaaccatat atacacacat atgtatgcat acacacagac agacacacac acccgaagct 180  
 ctagccaggc ccgttttcca tccctaagta ccattctctc atttgggccc ttctaggggt 240  
 ggggccctga gcttgggttg tagaagtttg gtgctaatat aacctagct ttaatcccca 300  
 tgaaggagag tgtagacctc atcttctgtc gctcccgcgt gcctttcagt ttacagtgat 360  
 65 ccatcaagag ggctatggga gccaaagtga cacgggggat tgaggctaata tcacctgaac 420

-24-

tcgaaaacag cgcccagctt cctcacgcga ggcacgcgtc ttttcttttt ttttctcga 480  
 gacggagtcct cgctgtgttg cccaggctgg agtgacgtgg cacggctctg gctcactgca 540  
 agctccacct cctggattca taccattctc ctgcttcagc cttccgagta gctgggacta 600  
 taggtgccaa cctacacgcc tagctaattt ttttttgtat ttttagtaga gacagggttt 660  
 5 caccgtgtta gccaggatgg tctcgtcctg actttgtgat ccgcccgcct cggcctccca 720  
 aagtgcctggg attacaggcg tgagccacca cacctggccc cggcacgtat cttttaagga 780  
 atgacaccag ttctgtgctt ctgaccaaag aaaaaatgtc acaggagact ttgaagaggc 840  
 agacaggagg gtggtggcag caacactgca gctgctctc gatgctgctg ggggtgctctc 900  
 cggagcgggt gtgaacagcg cacttcaaca tgagcaggcg cctggctccg gtgtgtcctc 960  
 10 acttcagtgg tgacactgga tgggtgaagc cagccttttg ggcaggaaac cagctcagag 1020  
 aggctaccca gctcagctgc tggcaggagc caggtattta cagccataat gtgtgtaaag 1080  
 aaaaaacacg ttctgcaaga aactctccta cccgctcggg agactggggc tccttgcttg 1140  
 ggatgagctt cactcaacgt ggagatgggt gtggaactgg cctgaaaaag cgggccttgc 1200  
 agggccaagt gaggtcctca ggtcctaacc cagtggccct ctgaaagggg gtgtgcaggc 1260  
 15 gaggggagca ggaggcttct ctctagtccc ttggaggct ttggctgaga gaagagttag 1320  
 cagggagctg ggaatgggtc aggcagggaa gggagctgaa gtgattcggg gctaattgct 1380  
 cagatcgatg tatttctctc cctggtctcc cggagccctc ttgtcacgcg tgctgccttg 1440  
 caggaggccc atctcttctg ggagcttatc tgacttaact tcaactacaa gttcgctctt 1500  
 acgagaccgg gggtagcgtg atctcctgct tcctgagcg cctgcacggc ag  
 20  
 <210> 50  
 <211> 921  
 <212> DNA  
 <213> homo sapiens  
 25  
 <400> 50  
 ctgtgggtccc agctactcag gaggtcaggc cgggaggatt gcttgagccc aggagttgga 60  
 tgttgcagtg agccaagatc gcaccattgc cctccactct gggccacgga gcaataccct 120  
 30 gtctcagaaa acaacaaca aaaagcagaa acgctgaagg ggtcggttta cgggaaaacc 180  
 gcctgtcaga acacttggtt actcctaccc cagatcagtg gacctgggaa tgagggttgg 240  
 tccccggagg cttttctcca agctgttgcc accagacccg ccatgggaac cctggccaca 300  
 gaagcctccc ggggagttag ccagagcctg gaccgctgtg ctgatgtgtc tggggtggag 360  
 35 ggagggtggg gagtgtgcaa ggggtgtgtg tgcccggggg ggtgttcatt ggcaagcatg 420  
 tgcgtgcttg tgtgtgtgcg tgcccctccc ctgcagccgt cgggtgtatc tccctccagc 480  
 cccttcgcca ccttctgagc attgtctgtc cactgagac tgcccagaga cagcagagct 540  
 ccacgtgggt ttaaggggag acctttccct ggacctgggg gtctcgccgt atctcatgac 600  
 cagggtgctaa atgacccgac atgcataacc tgcctttoga tgaccaacct cctgtcccc 660  
 gtcccgtcga cctgcccccg tggcgtctca cgggtgatgc tgctcctgac attggtgttc 720  
 40 actgtagcaa actacattct ggatgggaat ttcatgtac atgtgtggca tgtggaaaat 780  
 ttcaataaaa atggacttga tttagaaagc caaaaagctg tgtggtcctt ccagcacgga 840  
 tactttgacc tcttgcttac aaccccttcc ttgggtccga ggctggttagc tttgttcaact 900  
 tcagatgggt gggggcgggt g  
 45  
 <210> 51  
 <211> 338  
 <212> DNA  
 <213> homo sapiens  
 50  
 <400> 51  
 atgatctatc tagatgcctt accgtaaaat caaaacacaa aaccctactg actcattccc 60  
 tcccttccag atattacccc atttctctac ttccattgt agccaaactt tccaaaaatt 120  
 catgttctgt cttcatttcc tcatgttcaa cccacctgt cttagctacc acccctcagt 180  
 55 aacgacctag cctgggtaga aacaaatgtc agcatgata catactcaat gatccttcgt 240  
 cactgttgtc attgtcatca ttccatggcc ttactttccc tctcagcgcc atttgctaca 300  
 gtaagaaact ttctttcttg aattcttggg tctcttgg  
 60  
 <210> 52  
 <211> 1191  
 <212> DNA  
 <213> homo sapiens  
 65  
 <400> 52

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100

-25-

```

ctagcaagca ggtaaacgag ctttgtacaa acacacacag accaaccacat ccggggatgg 60
ctgtgtgttg cttaggcaga ggctgattaa acactcagtg tgttggtctt ctgtgccact 120
cctggaaaat aatgaattgg gtaaggaaaca gttaataaga aaatgtgcct tgctaactgt 180
gcacattaca acaaagagct ggagctcct gaaggaaaag ggcttggtcc gctgccgttc 240
5 aaacttgtca gtcaactcat gccagcagcc tcagcgtctg cctccccagc acaccctcat 300
tacaatgtgtc tgtctggcct gatctgtgca tctgctcgga gacgctcctg acaagtggg 360
aatttctcta tttctccact ggtgcaaaga gcggatttct ccctgcttct cttctgtcac 420
ccccgtcct ctccccagg aggtcctctg atttatggta gcttggact tgcttccccg 480
tctgactgtc cttgacttct agaattggaag aagctgagct ggtgaaggga agactccagg 540
10 ccatcacaga taaaagaaaa atacaggaag aaatctcaca gaagcgtctg aaaatagagg 600
aagacaaact aaagcaccag catttgaaga aaaaggcctt gagggagaaa tggcttctag 660
atggaatcag cagcggaaaa gaacaggaag agatgaagaa gcaaaatcaa caagaccagc 720
accagatcca ggttctagaa caaagtatcc tcaggcttga gaaagagatc caagatcttg 780
aaaaagctga actgcgaatc tcaacgaagg aagaggccat tttaaagaaa ctaaagtcaa 840
15 ttgagcggag aacagaagac attataagat ctgtgaaagt ggaaagagaa gaaagagcag 900
aagagtcaat tgaggacatc tatgctaata tcctgacct tccaaagtcc tacatacctt 960
ctaggttaag gaaggagata aatgaagaaa aagaagatga tgaacaaaat aggaaagctt 1020
tatatgccat ggaaattaaa gttgaaaaag acttgaagac tggagaaaag acagttctgt 1080
cttccaatac ctctggccat cagatgactt taaaaggtag aggagtaaaa gtttaagatg 1140
20 atgggcaaaa gtccagtgtg ttcagtaaag tgctaatac aagttggagg t

<210> 53
<211> 1200
<212> DNA
25 <213> homo sapiens

<400> 53

aacagggact ctactctat caaccccagg ctggagtcg gtgcgccac cctggctccc 60
30 tgcaacctcc gctcccagg ctcaagcaac tctcctgcct cagtcgctct agtagctggg 120
actacaggca cacaccacca tgcccagcca atttttgcat tttttgtaga gacagggttt 180
cgcttctgt ccaggccggc atcatatact ttaaactcatg cccagatgac tttataacct 240
aatacaatat atcaggttgg tttaaaaata attgcttttt tttatttttt gcatttttgc 300
accaacctta atgctatgta aatagtgtt atactgttgc ttaacaacag tatgacaatt 360
35 ttggcttttt ctttgtatta ttttgtattt ttttttttta ttgtgtggtc tttttttttt 420
ttctcagtgt tttcaattcc tccttgggtg aatccatgga tgcaaaaccc acagatatga 480
agggctggct atatatgcat tgatgattgt cctattatat tagttataaa gtgtcattta 540
atatgtagtg aaagttatgg tacagtggaa agagtgttg aaaacataaa catttggacc 600
tttcaagaaa ggtagcttgg tgaagttttt cacttcaaa ctatgtccca gtcagggttc 660
40 tgctactaat tagctataat ctttgacaaa attacatcac ctttgagtct cagttgcctc 720
acctgtaaaa tgaaagaact ggatactctc taaggctact tccagccctg tcattctata 780
actctgttat gctgaggaa gaaattcacat tgtgttaact gtatgagtca aactgaaaat 840
gattattaaa gtgggaaaaa gccaatgtct tctcttagaa agctcaacta aatttgagaa 900
gaataatctt ttcaattttt taagaattta aatattttta agggtttgac ctattttatt 960
45 agagatgggg tctcactctg tcaaccagac tggagtacag tggcacaatc atagctcact 1020
gctgcctcaa attcatgggc tcaagtgate ctctgcctc tgcctccaga gtactgcga 1080
ctatgggcat gtgccaccac gcctggctaa catttgtatt gacctattta tttattgtga 1140
tttatactct tttttttttt tctttttttt ttttttacia aatcagaaat acttattttg 1200

50 <210> 54
<211> 989
<212> DNA
<213> homo sapiens

55 <400> 54

aagccaccac tcaaaacttc ctatacattt tcacagcaga gacaagtga catttatttt 60
tatgcctttc ttcctatgtg tatttcaagt ctttttcaaa acaaggcccc aggactctcc 120
gattcaatta gtccttgggc tggctgactg tgcaggagtc cagggagcct ctacaaatgc 180
60 agagtgactc tttaccaaca taaaccttag atacatgcaa aaagcaggac ccttctcca 240
ggaatgtgcc atttcagatg cacagcacc atgcagaaaa gctggaattt tcttggaa 300
cgactgtgat agaggtgctt acatgaacat tgctactgtc tttctttttt tttgagacag 360
gtttcgcttg tgcccaggct gagtgcattg cgtgatctca ctactgcaa ttccacctcc 420
aggttcaagc attctcctgc tcagcctcct agtagctgg ttacaggcac tgccaccatg 480
65 ccggctaatt ttgtattttt gttagatgg atttctccat ttggtcaggc ggtctcgaa 540

```

5	cccaacctca	gtgatctgcc	acctcagcct	cctaagtgtt	ggattacagg	atgagccacc	600	
	cgaccggcca	ctactgtctt	tctttgaccc	ttccagtttc	gaagataaag	aggaaataat	660	
	ttctctgaag	tacttgataa	aatttccaaa	caaaacacat	gtccacttca	ctgataaaaa	720	
	atttaccgca	gtttggcacc	taagagtatg	acaacagcaa	taaaaagtaa	tttcaaagag	780	
	ttaagatttc	ttcagcaaaa	tagatgattc	acatcttcaa	gtcctttttg	aaatcagtta	840	
	ttaatattat	tcttttctca	tttccatctg	aatgactgca	gcaatagttt	tttttttttt	900	
	tttttttttt	ttgcgagatg	gaatctcgtc	ctgtcgccca	gcgggagtgc	actggcgcaa	960	
gcccggctca	cgcgaatctc	tgccaccgc						
10	<p>&lt;210&gt; 55            &lt;211&gt; 250            &lt;212&gt; DNA            &lt;213&gt; homo sapiens</p>							
15	<p>&lt;400&gt; 55</p>							
20	catttcccca	ttggctcctga	tgttgaagat	ttagttaaag	aggctgtaag	tcagggttcga	60	
	gcagaggcta	ctacaagaag	tagggaatca	agtcctctac	atgggctatt	aaaactaggt	120	
	agtgggtggag	tagtgaaaaa	gaaatctgag	caacttcata	acgtaactgc	ctttcaggga	180	
	aaagggcatt	cttttaggaac	tgcatctggt	aaccacacc	ttgatccaag	agctagggaa	240	
	acttcagttg							
25	<p>&lt;210&gt; 56            &lt;211&gt; 2270            &lt;212&gt; DNA            &lt;213&gt; homo sapiens</p>							
	<p>&lt;400&gt; 56</p>							
	30	gcgcccccca	gcagcgcccg	cgccctccgc	gccttctccg	ccgggacctc	gagcgaaaga	60
		ggccccgcgc	ccgcccagcc	ctcgccctcc	tgcccaccgc	gcacaccgcg	ccgccacccc	120
gacccccgtg		cgcacggcct	gtccgctgca	caccagcttg	ttggcgcttt	cgtcgccgcg	180	
ctcgcccgctg		ctctactcctg	cgcgccacaa	tgagctcccg	catcgccagg	gcgctcgctt	240	
tagtgcgtcac		ccttctccac	ttgaccaggc	tgggcgctctc	cacctgcccc	gctgctgcc	300	
actgccccct		ggaggcgccc	aagtgcgcgc	cgggagtcgg	gctggctcgg	gacggctcg	360	
gctgctgtaa		ggtctgcgcc	aagcagctca	acgaggactg	cagcaaaacg	gacgctcg	420	
accacaccaa		ggggctggaa	tgcaactctg	gcgcacaagc	caccgctctg	aaggggatct	480	
gcagagctca		gctcagagggc	agacctgtg	aataataact	cagaatctac	caaaacgggg	540	
aaagtttcca		gcccacttgt	aaacatcagt	gcacatgtat	tgatggcgcc	gtgggctgca	600	
ttctctctgt		tccccaagaa	ctatctctcc	ccaacttggg	ctgtcccaac	cctcggtctg	660	
tcaaagttac		cgggcagtg	tgcgaggagt	gggtctgtga	cgaggatagt	atcaaggacc	720	
ccatggagga		ccaggacggc	ctccttggca	aggagctggg	attcgatgcc	tcggaggtgg	780	
agttgacgag		aaacaatgaa	ttgattgcag	ttggaaaagg	cagctcactg	aagcggctcc	840	
ctgttttttg		aatggagcct	cgcctcctat	acaacccttt	acaaggccag	aatgtattg	900	
ttcaaaacac		ttcatgggtc	cagtgtctca	agacctgtgg	aactgggtatc	tccacacgag	960	
35	ttaccaatga	caaccctgag	tgccgccttg	tgaagaaaac	cggatttgtt	gaggtgcggc	1020	
	cttctggaca	cttgcagtga	agcagcctga	aaaaggggcaa	gaaatgcagc	aagaccaaga	1080	
	aatcccccca	accagtcagg	tttacttacg	ctggatgttt	gagtgtgaag	aaataccggc	1140	
	ccaagtactg	cggttcctgc	gtggacggcc	gatgctgcac	gccccagctg	accaggactg	1200	
40	tgaagatgcg	gttccgctgc	gaagatgggg	agacactttc	caagaacgtc	atgatgatcc	1260	
	agtcctgcaa	ttgcaactca	aaactgccgc	atgccaatga	agcagcgttt	cccttctaca	1320	
	ggctgtttcaa	tgacattcac	aaatttaggg	actaaatgct	acctgggttt	ccagggcaca	1380	
	cctagacaaa	caaggagaga	gagtgtcaga	atcagaatca	tggagaaaat	gggccccggg	1440	
45	gggtgtgggtg	atgggactca	ttgtagaaag	gaagccttgc	tcattcttga	ggagcattaa	1500	
	ggtattttcga	aactgcgaag	ggtgctgggt	cggatggaca	ctaattgcagc	cacgatttga	1560	
	gaataactttg	cttcatagta	ttggagcaca	tgttactgct	tcatttttga	gctttgtggag	1620	
	ttgatgactt	tctgtttttc	gtttgtaaat	tatttgctaa	gcataattttc	tctaggcttt	1680	
50	tttcccttttg	gggttctaca	gtcgtaaaag	agataataag	attagtttga	cagtttaaag	1740	
	ctttttattcg	tcttttgaca	aaagtaaatg	ggagggcact	ccatcccttc	ctgaaggggg	1800	
	acactccatg	agtgctctgt	agaggcagct	atctgcactc	ttaactgcga	acagaaatca	1860	
	ggtgtttttaa	gactgaatgt	tttatttatc	aaaatgtagc	ttttggggag	ggaggggaaa	1920	
55	tgtaatactg	gaataatttg	taaatgattt	taattttata	ttcagtgaaa	agattttatt	1980	
	tatgggaatta	accattttaat	aaagaaatat	ttacctataa	tctgagtgtg	tgccatttcg	2040	

ttataccttc agtagagaaa agtctttgca tataaagtaa tgtttaaaaa acatgtattg 2220  
aacacgacat tgtatgaagc acaataaaga ttctgaagct aaaaaaaaaa

```

5    <210> 57
      <211> 1636
      <212> DNA
      <213> homo sapiens

```

<400> 57

10	cttgaatgaa	gctgacacca	agaaccgcgg	gaagagcttg	ggcccaaagc	aggaaagggg	60
	agcgctcgag	ttggaaagga	accgctgctg	ctggccgaac	tcaagccccc	gcgccccac	120
	cagtttgatt	ggaagtcagg	ctgtgaaacc	tggagcgtcg	ccttctcccc	agatggctcc	180
	tggtttgctt	ggtctcaagg	acactgcctc	gtcaaacctg	tccccctggc	gttggaggag	240
15	cagttcatcc	ctaaagggtt	tgaagccaaa	agccgaagta	gcaaaaatga	gacgaaaggg	300
	cggggcagcc	caaaagagaa	gacgctggac	tgtggtcaga	ttgtctgggg	gctggccttc	360
	agcccgctgg	cttccccacc	cagcaggaag	ctctgggcac	gccaccacc	ccaagtgcc	420
	gatgtctctt	gctctggttc	tgtcacggga	ctcaacgatg	ggcagatcaa	gatctgggag	480
	gtgcagacag	ggctctctgt	tttgaattct	tccggccacc	aagatgtcgt	gagagatctg	540
20	agcttcacac	ccagtggcag	tttgattttg	gtctccgcgt	cacgggataa	gactcttcgc	600
	atctgggacc	tgaataaaca	cggtaaacag	attcaagtgt	tatcgggcc	cctgcagtgg	660
	gtttactgct	gttccatctc	cccagactgc	agcatgtctg	gctctgcagc	tggagagaag	720
	tcggtctctt	tatggagcat	gaggtcctac	acgtttaatt	ggaagctaga	gggccataac	780
	agcagtgttg	tctctttgta	cttctcccc	gactctgccc	tgcttgtcac	ggcttctta	840
25	gataccaatg	tgattatgtg	ggacccctac	accggcgaaa	ggctgaggtc	actccaccac	900
	accaggtttg	accccgccat	ggatgacagt	gacgtccaca	ttagctcact	gagatctgtg	960
	tgcttctctc	cagaaggctt	gtaccttgcc	acggtggcag	atgacagact	cctcaggatc	1020
	tgggcccctg	aactgaaaac	tcocattgca	tttgtctcta	tgaccaatgg	gccttgctgc	1080
	acattttttc	acatagggtg	agtcattgcc	acagggacaa	gagatggcca	gctccagttc	1140
30	tggacagctc	ctagggctct	gtcctcactg	aagcacttat	gccggaaagc	ccttcgaagt	1200
	ttcctaacaa	cttaccaagt	cctagcactg	ccaattcccc	agaaaatgaa	agagttcctc	1260
	acatacagga	ctttttaagc	aacaccacat	cttgtgtctc	tttgtagcac	tgtaaatcgt	1320
	cctgtcaaa	ggagtgtgctg	gaataaatgg	ccaaacatct	ggctctgcat	tgaaatatga	1380
	tttctttggg	atttgtgaata	gaatgtagca	aaaccagatt	ccagtgtaga	taaaagaatt	1440
35	tttttgtctt	taaatagata	caaatgtcta	tcaacttta	tcaagttgta	acttatattg	1500
	aagacaattt	gatacataat	aaaaaattat	gacaatgtcc	tgggaaaaaa	aaaatgtaga	1560
	aagatgggtg	agggtgggat	ggatgaggag	cgtggtgacg	ggggcctgca	gcgggttggg	1620
	gaccctgtgc	tcgctt					

```
40    <210> 58
      <211> 460
      <212> DNA
      <213> homo sapiens
```

45      <400>    58

50	ccatgtgtgt	atgagagaga	gagagattgg	gagggagagg	gagctcacta	gcgcataatgt	60
	gcctccaggg	ggctgcagat	gtgtctgagg	gtgagcctgg	tgaagagaa	gacaaaagaa	120
	tggaatgagc	taaacagacc	gcctgggggtg	ggaggccag	cccatttgta	tgcagcaggg	180
	ggcaggagcc	cagcaaggga	gcctcatttc	ccaggactct	ggaggagact	gagaccatcc	240
	atgcccgag	agccctccct	cacactccat	cctgtccagc	ctaattgtg	caggtgggga	300
	aactgaggct	gggaagtac	atagcaagt	actggcagag	ctgggactgg	aacccaacca	360
	gcctcctaga	ccacggttct	tcccatcaat	ggaatgctag	agactccagc	caggtgggta	420
	ccqagctcga	attcctaatac	tatggtcatac	ctgttctctg			

```
<210> 59
<211> 1049
<212> DNA
<213> homo sapiens
```

<400> 59

65 atctgatcaa gaatacctgc cctggctact ctgcggatgt ttctgtccac ttgttcacat 60  
tgaggaccaa gatatacctt tttacagagg cacttggtcg gtctaacaca gacacctcca 120  
tgacgacatg ctggctcaca ttttgcagtt ctgcgaaagt ccccccacca gcctggacta 180

-28-

```

cagcagcact ttcccggtggg ggtgcagtag ccgtttcgac agagcctgga gcactctgaa 240
gtcagtggtct gtgcagggttg taccgtgggt ctgcattcct caggcattaa aggtcttttg 300
ggatctacaa ttttgtagag ttttccattg tgagtctggg tcatactttt actgcttgat 360
5   aaaatgtaaa cttcacctag ttcatcttct ccaaatccca agatgtgacc ggaaaagtag 420
    cctctacagg acccactagt gccgacacag agtgggtttt cttgccactg ctttgtcaca 480
    ggacttttgct ggagagttag gaaattccca ttacgatctc caaacacgta gcttccatac 540
    aatctttctg actggcagcc ccggtataca aatccacca ccaaaggacc attactgaat 600
    ggcttgaatt ctaaaagtga tggctcactt tcataatctt tcccctttat tatctgtaga 660
    attctggctg atgatctgtt ttttccattg gagtctgaac acagtatcgt taaattgatg 720
10  tttatatcag tgggatgtct atccacagca catctgcctg gatcgtggag cccatgagca 780
    aacacttcgg ggggctgggt ggtgctgttg aagtgtgggt tgctccttgg tatggaataa 840
    ggcacgttgc acatgtctgt gtccacatcc agccgtagca ctgagcctgt gaaatcactt 900
    aacccatcca tttcttccat atcatccagt gtaatcatcc catcaccaag aatgatgtac 960
    aaaaacccgt cagggccaaa gagcagttgc cctcccagat gctttctgtg gagttctgca 1020
15  acttcaagaa agactctggc tgttctcaa

```

&lt;210&gt; 60

&lt;211&gt; 747

&lt;212&gt; DNA

20 &lt;213&gt; homo sapiens

&lt;400&gt; 60

```

tttttcaaat cacatatggc ttctttgacc ccatcaaata actttattca cacaaacgtc 60
25  ccttaattta caaagcctca gtcattcata cacattaggg gatccacagt gttcaaggaa 120
    cttaaataata atgtatcata ccaaccgaag taaaccaagt acaaaaaata ttcataataa 180
    gttgttcaca cgtaggtcct agattaccag cttctgtgca aaaaaaggaa atgaagaaaa 240
    atagatttat taactagtat tggaaactaa ctttgtgcct ggcttaaac ctccctcacg 300
    ctgctctgtc ccacacaaat gtttaagaag tcaactgcaat gtactcccg gctctgatga 360
30  aaagaagccc ctggcacaaa agattccagt gccctgaag aggctccctt cctcctgtgg 420
    gctctcctag aaaaccagcg ggacggcctc cctgctgata ccgtctataa ccttaggggg 480
    ccctcgggca ggcaacggca gtggactcat ctcggtgatg gctgtagatg ctaacactgg 540
    ccaattcaat gccacaccta ctggttacc tttgagggca tttctccaga cagaagcccc 600
    ttgaagccta ggtagggcag gatcagagat acaccgtgt ttgtctcgaa gggctccaca 660
35  gcccagtacg acatgcttgc agaagtagta tctctggact tctgcctcca gtcgaccggc 720
    cgcgaattta gtagtaatat cggccgc

```

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509  
510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800  
801  
802  
803  
804  
805  
806  
807  
808  
809  
810  
811  
812  
813  
814  
815  
816  
817  
818  
819  
820  
821  
822  
823  
824  
825  
826  
827  
828  
829  
830  
831  
832  
833  
834  
835  
836  
837  
838  
839  
840  
841  
842  
843  
844  
845  
846  
847  
848  
849  
850  
851  
852  
853  
854  
855  
856  
857  
858  
859  
860  
861  
862  
863  
864  
865  
866  
867  
868  
869  
870  
871  
872  
873  
874  
875  
876  
877  
878  
879  
880  
881  
882  
883  
884  
885  
886  
887  
888  
889  
890  
891  
892  
893  
894  
895  
896  
897  
898  
899  
900  
901  
902  
903  
904  
905  
906  
907  
908  
909  
910  
911  
912  
913  
914  
915  
916  
917  
918  
919  
920  
921  
922  
923  
924  
925  
926  
927  
928  
929  
930  
931  
932  
933  
934  
935  
936  
937  
938  
939  
940  
941  
942  
943  
944  
945  
946  
947  
948  
949  
950  
951  
952  
953  
954  
955  
956  
957  
958  
959  
960  
961  
962  
963  
964  
965  
966  
967  
968  
969  
970  
971  
972  
973  
974  
975  
976  
977  
978  
979  
980  
981  
982  
983  
984  
985  
986  
987  
988  
989  
990  
991  
992  
993  
994  
995  
996  
997  
998  
999  
1000



Human Nucleic Acid Sequences and Protein Sequences from  
Endothelial Cells

The invention relates to nucleic acid sequences -- mRNA, cDNA, genomic sequences -- from tissue of human endothelial cells, which code for gene products or portions thereof, and their use. In addition, the invention relates to the polypeptides that can be obtained by way of the sequences and their use.

Angiogenesis is a process that can be observed in the adult living creature in the cyclic processes of reproduction in the female, in wound healing and in various pathological situations, such as, e.g., tumor growth, rheumatic diseases, endometriosis, in the case of collateral formation in the heart and in the periphery, etc.

Persistent angiogenesis can be the cause of various diseases, such as psoriasis, arthritis, such as rheumatoid arthritis, hemangioma, angiofibroma, eye diseases, such as diabetic retinopathy, neovascular glaucoma, nephropathies, such as glomerulonephritis, diabetic nephropathy, malignant nephrosclerosis, thrombic microangiopathic syndrome, transplant rejections and glomerulopathy, fibrotic diseases, such as cirrhosis of the liver, mesangial cell proliferative diseases, and arteriosclerosis or can lead to an aggravation of these diseases.

If it were possible to induce or to inhibit angiogenesis, it would be possible to ensure thorough treatment of several diseases. To this end, the genes or the nucleic acid sequences that are relevant to the angiogenesis had to become known.

It was not previously known which genes or nucleic acid sequences or portions thereof are angiogenesis-relevant.

Nucleic acid sequences could now be found that are angiogenesis-relevant.

These sequences either have not yet been described or they are known only as nucleic acid sequences from rodents, but without reference to angiogenesis. Additional sequences are described as human genes or portions thereof, but not in reference to possible angiogenesis-relevant properties.

In the search for angiogenesis-relevant genes, endothelial cells were obtained from the foreskins of adults that were cultivated in two different ways:

- a) in a rat-tail collagen matrix in subconfluent density and
- b) in a gel that consists of an extracellular matrix (matrigel).

Under culture type a), the cells form the standard cobblestone-like monolayer.

Under culture type b), the cells form netlike structures with tubular entities.

Cell culture type a) represents an early angiogenesis state with a first and foremost proliferative phenotype.

Cell culture type b) represents a model for a later phase of angiogenesis, in which the differentiation of the endothelial cells leads to a formation of hose-shaped structures. These structures are a requirement for a blood flow that is separated from the tissue surface.

mRNA is isolated from both cell culture types, transcribed into cDNA and cut with a restriction endonuclease into fragments measuring 200 to 1500 bp. By means of a subtractive PCR technique, the fragments that occur differentially in both states were amplified. They were incorporated into vectors and cloned. The clones were first sequenced, and then their sequences were completed with bioinformatory techniques.

With the aid of a quantitative PCR technique that is described in the literature (Pilarsky et al., 1998, see Test Description), it was first examined whether the genes are expressed differentially in the two culture states. For standardization, the expression of the 23 kDalton protein (see Test Description) was used as an internal marker. In the differential expression, ratios of 2- to 7-fold occurred.

The nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59 that play a role in angiogenesis as candidate genes could now be found.

The invention thus relates to nucleic acid sequences that code a gene product or a portion thereof, comprising

- a) a nucleic acid sequence that is selected from the group of nucleic acid sequences Seq. ID No. 1 to Seq. ID No.

- b) an allelic variation of the nucleic acid sequences named under a)
- or
- c) a nucleic acid sequence that is complementary to the nucleic acid sequences named under a) or b).

In addition, the invention relates to nucleic acid sequences according to one of sequences Seq. ID No. 1 to Seq. ID No. 59 or a complementary or allelic variant thereof and the nucleic acid sequences thereof, which have 90% to 95% homology to a human nucleic acid sequence.

The invention also relates to nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59, which are expressed elevated in endothelial cell tissue.

The invention further relates to nucleic acid sequences comprising a portion of the above-mentioned nucleic acid sequences in such a sufficient amount that they hybridize with sequences Seq. ID No. 1 to Seq. ID No. 59.

The nucleic acid sequences according to the invention generally have a length of at least 50 to 3000 bp, preferably a length of at least 150 to 2800 bp, especially preferably a length of 150 to 2600 bp.

With the sequences Seq. ID No. 1 to Seq. ID No. 59 according to the invention, expression cassettes can also be built using current process practice, whereby on the cassette at least one of the nucleic acid sequences according to the invention is combined with at least one control or regulatory sequence that is generally known to one skilled in the art, such as, e.g., a

suitable promoter. The sequences according to the invention can be inserted in a sense or antisense orientation.

A large number of expression cassettes or vectors and promoters which can be used are known in the literature.

Expression cassettes or vectors are defined as:

1. bacterial, such as, e.g., phagescript, pBs,  $\phi$ X174, pBluescript SK, pBs KS, pNH8a, pNH16a, pNH18a, pNH46a (Stratagene), pTrc99A, pKK223-3, pKK233-3, pDR540, pRIT5 (Pharmacia),

2. eukaryotic, such as, e.g., pWLneo, pSV2cat, pOG44, pXT1, pSG (Stratagene), pSVK3, pBPV, pMSG, pSVL (Pharmacia).

Control or regulatory sequences are defined as suitable promoters. Here, two preferred vectors are the pKK232-8 and the PCM7 vector. In particular, the following promoters are intended: lacI, lacZ, T3, T7, gpt, lambda P<sub>R</sub>, trc, CMV, HSV thymidine-kinase, SV40, LTRs from retrovirus and mouse metallothionein-I.

The DNA sequences located on the expression cassette can code a fusion protein that comprises a known protein and a bioactive polypeptide fragment.

The expression cassettes are likewise the subject matter of this invention.

The nucleic acid sequences according to the invention can also be used to produce full-length genes. The genes that can be obtained are likewise the subject matter of this invention.

The invention also relates to the use of the nucleic acid sequences according to the invention and the gene fragments that can be obtained from use.

The nucleic acid sequences according to the invention can be moved with suitable vectors into host cells, in which, as the heterologous part, the genetic information that is contained on the nucleic acid sequences and that is expressed is located.

The host cells containing the nucleic acid sequences are likewise the subject matter of this invention.

Suitable host cells are, e.g., prokaryotic cell systems such as E. coli or eukaryotic cell systems such as animal or human cells or yeasts.

The nucleic acid sequences according to the invention can be used in the sense or antisense form.

Production of polypeptides or their fragments is done by cultivation of the host cells according to current cultivation methods and subsequent isolation and purification of the peptides or fragments, likewise using current processes.

The invention further relates to nucleic acid sequences, which code at least a partial sequence of a bioactive polypeptide.

This invention further relates to polypeptide partial sequences, so-called ORF (open-reading-frame)-peptides that are expressed by the inventive partial sequences.

The invention further relates to the polypeptide sequences that have at least 80% homology, especially 90% homology to the polypeptides.

The invention also relates to antibodies that are directed against a polypeptide or a fragment and that are coded by the nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59 according to the invention.

Antibodies are defined especially as monoclonal antibodies.

The polypeptides that are coded by the nucleic acid sequences according to the invention can also be used as tools for finding active ingredients in the case of angiogenic diseases, which is likewise the subject matter of this invention.

Likewise the subject matter of this invention is the use of nucleic acid sequences according to sequences Seq. ID No. 1 to Seq. ID No. 59 for expression of polypeptides, which can be used as tools for finding active ingredients against angiogenetic diseases.

The invention also relates to the use of the polypeptides expressed by the nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59 according to the invention as pharmaceutical agents in gene therapy for the treatment of angiogenic diseases, or for the production of a pharmaceutical agent for treating angiogenic diseases.

The nucleic acids according to the invention or the proteins that are expressed by way of these nucleic acids can thus be used either alone or in a formulation as a pharmaceutical agent for treatment of psoriasis, arthritis, such as rheumatoid arthritis, hemangioma, angiofibroma, eye diseases, such as diabetic retinopathy, neovascular glaucoma, nephropathies, such as glomerulonephritis, diabetic nephropathy, malignant

nephrosclerosis, thrombic microangiopathic syndrome, transplant rejections and glomerulopathy, fibrotic diseases, such as cirrhosis of the liver, mesangial cell proliferative diseases, arteriosclerosis and injuries to the nerve tissue.

The invention also relates to pharmaceutical agents that contain at least one polypeptide sequence that are expressed by the nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59 according to the invention.

The nucleic acid sequences found according to the invention can also be genomic or mRNA sequences.

The invention also relates to genomic genes, their promoters, enhancers, silencers, Exon structure, Intron structure and their splice variants that can be obtained from cDNAs of sequences Seq. ID No. 1 to Seq. ID No. 59, and their use together with suitable regulatory elements, such as suitable promoters and/or enhancers.

With the nucleic acids according to the invention (cDNA sequences), genomic BAC, PAC and Cosmid libraries are screened and specific human clones are isolated via complementary base pairing (hybridization). The thus isolated BAC, PAC and Cosmid clones are hybridized using fluorescence-in-situ hybridization on metaphase chromosomes and the corresponding chromosome sections on which the corresponding genomic genes lie are identified. BAC, PAC and Cosmid clones are sequenced in order to clarify the corresponding genomic genes in their complete structure (promoters, enhancers, silencers, Exons and Introns). BAC, PAC



and Cosmid clones can be used as independent molecules for gene transfer.

The invention also relates to BAC, PAC and Cosmid clones containing functional genes and their chromosomal localization according to sequences Seq. ID No. 1 to Seq. ID No. 59 for use as vehicles for gene transfer.

11/11/99 11:11:11

## Meanings of Technical Terms and Abbreviations

Nucleic acids = Nucleic acids in this invention are defined as: mRNA, partial cDNA, full-length cDNA and genomic genes (chromosomes).

ORF = Open Reading Frame, a defined sequence of amino acids that can be derived from the cDNA sequence.

[illegible]

The following examples explain the production of the nucleic acid sequences according to the invention without limiting the invention to these examples and nucleic acid sequences.

### Example 1

#### 1. Search for Angiogenesis-Relevant Candidate Genes

##### 1.1 Cells That Are Used

Primary, human, microvascular endothelial cells (MVEC) were prepared from human foreskins and selected by means of biotinylated anti CD31 (PECAM) antibodies (reference).

Culture conditions: 37°C, 5% CO<sub>2</sub>

Medium: M199, 10% FCS, 10% human serum, 6 µg/ml of ECGF, 1 mmol of sodium pyruvate, 3 U/ml of heparin, 100 U/ml of penicillin, 100 µg/ml of streptomycin, 1 x non-essential amino acids.

##### 1.2 Cultivation and RNA Preparation

For culture type a), the cells are cultivated on plastic that is coated with collagen I. For culture type b), the cells are broken off on a gel that consists of extracellular matrix proteins. The matrigel that is used in this case (Becton Dickinson) was diluted 1 to 1 with M199 medium, poured into the culture vessel used in the cold state (60 µl/cm<sup>2</sup>) and gelled at 37°C for 30 minutes. Then, the cells were broken off.

For culture types a) and b), MVEC in a density of 2x10<sup>4</sup>/cm<sup>2</sup> were broken off and incubated for 7 hours at 37°C, 5% CO<sub>2</sub>.

The total RNA preparation was performed according to the guanidinium thiocyanate method with subsequent centrifuging through a cesium chloride cushion (Sambrook, J.; Fritsch, E. F.; and Maniatis, T.; 1989, Molecular Cloning: A Laboratory Manual, Cold Spring Harbour Laboratory Press). The polyA<sup>+</sup> RNA selection was performed by way of oligo (dT)-cellulose columns (mRNA Purification Kit, Pharmacia Biotech).

### 1.3 Adjustment of Subtractive cDNA-Banks

The subtraction was performed according to the method of Diatchenko et al. (Proc. Natl. Acad. Sci. U.S.A., 1996, June 11, 93:6025-30) with the aid of the PCR-select cDNA subtraction kit.

The polyA + RNA, which contains the target sequences, is referred to as tester, and the polyA + RNA that is to be drawn therefrom is referred to as driver.

Two subtractions were performed, whereby polyA + RNA of culture type a) and polyA + RNA of culture type (b) were each used once as tester. The following test description shows only one subtraction by way of example.

### 1.4 Synthesis of Double-Strand cDNA (ds cDNA)

A double-strand cDNA synthesis is performed both for the test and for the driver.

## 1. Strand Synthesis

The strand synthesis is performed with the following batch:

polyA + RNA	2 $\mu$ g
cDNA-synthesis primer (10 $\mu$ M)	1 $\mu$ l
water	add 5 $\mu$ l

The reactions are incubated for 2 minutes at 70°C and then for 2 minutes on ice.

The following was added to each reaction:

5 x first-strand buffer (250 mmol of tris-HCL, pH 8, 330 mmol of Mg-chloride, 375 mmol of KCl)

2 $\mu$ l
10 mmol of dNTP
1 $\mu$ l
water
1 $\mu$ l
MMLV reverse transcriptase (200 U/ $\mu$ l)
1 $\mu$ l

The reactions were incubated for 90 minutes at 42°C and then for 2 minutes on ice.

## 2. Strand synthesis

The second strand synthesis was performed with the following batch:

1st Strand synthesis	10 $\mu$ l
water	48.4 $\mu$ l

5x second-strand buffer (500 mmol of KCL, 50  
 mmol of ammonium sulfate, 25 mmol of Mg-chloride,  
 0.75 mmol of  $\beta$ -NAD, 100 mmol of tris-HCL, pH 7.5,  
 0.25 mg/ml of BSA) 16  $\mu$ l  
 10 mmol of dNTP 1.6  $\mu$ l  
 20x second-strand enzyme cocktail (DNA  
 polymerase 1 6 U/ $\mu$ l of Rnase H 0.2 U/ $\mu$ l, *E. coli*  
 DNA ligase 1.2 U/ $\mu$ l) 4  $\mu$ l

The reactions were incubated for 2 hours at 16°C.

T4 DNA polymerase was added as follows to each reaction:

T4 DNA polymerase 3 U/ $\mu$ l 2  $\mu$ l

The reactions were incubated for 30 minutes at 16°C.

The reactions were halted with EDTA, whereby the solution  
 has the following composition:

20x EDTA/glycogen mix (200 mmol of EDTA, 1 mg/ml of  
 glycogen) 4  $\mu$ l

A phenol/chloroform extraction and an ethanol precipitation  
 were performed for each reaction. The pellets were resuspended  
 in 50  $\mu$ l of water each.

### 1.5 Rsa I-Digestion of the ds cDNA

An Rsa I-digestion was performed both for the tester and for  
 the driver. To this end, the following solutions were used:

ds cDNA 43.5  $\mu$ l

.10x Rsa I restriction buffer (100 mmol of bis	
tris propane-HCl, pH 7.0, 100 mmol of Mg-chloride,	
1 mmol of DTT)	5 $\mu$ l
Rsa I (10 U/ $\mu$ l)	1.5 $\mu$ l

The reactions were incubated for 90 minutes at 37°C.

The reactions were then halted with EDTA, whereby the solution has the following composition:

20x EDTA/glycogen mix (200 mmol of EDTA 1 mg/ml	
of glycogen)	2.5 $\mu$ l

Then, a phenol/chloroform extraction and an ethanol precipitation were performed for each reaction. The pellets that were produced in this connection were resuspended in 5.5  $\mu$ l of water for further processing.

#### 1.6 Adaptor Ligation of ds Tester cDNA Digested on Rsa I

The tester-cDNA was divided into 2 fractions. An adaptor was ligated to each tester fraction. The concentrations of the substances used for the two testers are cited in detail in the table below.

	<u>Tester-1</u>	<u>Tester-2</u>
Tester-cDNA	0.1 $\mu$ l	0.1 $\mu$ l
5x ligation buffer (250 mmol of tris-HCl, pH 7.8 50 mmol of MgCl <sub>2</sub> 100 mmol of DTT 0.25 mg/ml of BSA)	2 $\mu$ l	2 $\mu$ l
T4 DNA ligase (400 U/ $\mu$ l)	1 $\mu$ l	1 $\mu$ l
Adaptor 1 (10 $\mu$ m)	2 $\mu$ l	--
Adaptor 2 (10 $\mu$ m)	--	2 $\mu$ l
H <sub>2</sub> O	4.9 $\mu$ l	4.9 $\mu$ l
Total volumes	10 $\mu$ l	10 $\mu$ l

The reactions were incubated overnight at 16°C and then halted with EDTA (20x EDTA/glycogen mix, 1  $\mu$ l (200 mmol of EDTA, 1 mg/ml of glycogen)).

The reactions were incubated for 5 minutes at 72°C.

### 1.7 Subtractive Hybridizations

The driver and tester were then hybridized with one another in two steps.



### Hybridization

The first hybridization was performed for the two reactions with the solutions and compounds that are cited in the table below:

	Reaction 1	Reaction 2
Rsa-I-digested driver cDNA	1.5 $\mu$ l	1.5 $\mu$ l
Adaptor 1-ligated tester 1	1.5 $\mu$ l	--
Adaptor 2-ligated tester 2	--	1.5 $\mu$ l
4x hybridization buffer	1 $\mu$ l	1 $\mu$ l
Total volumes	4 $\mu$ l	4 $\mu$ l

The reactions were incubated for 90 seconds at 98°C and then directly for 8 hours at 68°C.

## 1. Hybridization

For the second hybridization, reactions 1 and 2 were mixed and freshly denaturated driver was added as follows:

Driver	1 $\mu$ l
4x hybridization buffer	1 $\mu$ l
water	2 $\mu$ l

1  $\mu$ l of this mixture was incubated for 90 seconds at 98°C and then fused as quickly as possible with reaction 1 and reaction 2.

The second hybridization was incubated overnight at 68°C. Then, 200  $\mu$ l of dilution buffer (20 mmol of HEPES-HCl (pH 8.3), 50 mmol of NaCl, 0.2 mmol of EDTA (pH 8.0)) was added to the second hybridization. Then, the second hybridization was incubated for 7 minutes at 68°C. The thus produced batch was then used for the PCR.

Differentially expressed fragments in the subtracted cDNA pools were selectively amplified by means of two successive PCRs.

The first PCR was performed with the following batch:

10x PCR buffer (400 mmol of tricine-KOH, pH 9.2, 150 mmol of KOAc,

35 mmol of MG(OAc) <sub>2</sub> , 37.5 $\mu$ g/ml of BSA)	2.5 $\mu$ l
10 mmol of dNTP	0.5 $\mu$ l
PCR primer 1 (10 $\mu$ m)	1 $\mu$ l
50x Advantage cDNA polymerase	0.5 $\mu$ l
dilute second hybridization	1 $\mu$ l
water	19.5 $\mu$ l

The PCR program was performed as follows:

75°C, 5 minutes
loop 94°C, 30 sec
66°C, 30 sec
72°C, 90 sec

Altogether, 27 cycles were performed.

The second PCR was performed with the following batch:

10x PCR buffer	2.5 $\mu$ l
10 mmol of dNTP	0.5 $\mu$ l
nested PCR-primer 1 (10 $\mu$ m)	1 $\mu$ l
nested PCR-primer 2R (10 $\mu$ m)	1 $\mu$ l
50x Advantage cDNA polymerase	0.5 $\mu$ l
PCR product	0.1 $\mu$ l
H2O	19.4 $\mu$ l

The PCR program was performed as follows:

94°C, 30 seconds
68°C, 30 seconds
72°C, 90 seconds

Altogether, 12 cycles were performed.

The subtraction efficiency was checked by a semi-quantitative PCR for a known, unregulated gene (SH3P18). It showed a reduction in the subtracted cDNA pool by a factor of 150-200.

## 2. Ligation of the Subtracted cDNA Pools in pUC 18

The cDNA pools that were subtracted forwards and backwards were ligated in pUC 18 Sma I/BAP (SureClone Ligation Kit, Pharmacia Biotech) and subsequently cloned in chemically competent *E. coli* DH5 $\alpha$ .

To do this, the fragments of the subtracted cDNA pools were filled out until they formed blunt ends and were phosphorylated. The following compositions were used for this purpose:

Subtracted cDNA pool	1.59 $\mu$ g
Klenow fragment	1 $\mu$ l
10x Blunting/kinasing buffer	2 $\mu$ l
Polynucleotide kinase	1 $\mu$ l
water	add 20 $\mu$ l.

The reactions were incubated for 30 minutes at 37°C, then purified by way of PCR purification columns and eluted in 30  $\mu$ l of water. Then, the DNA concentration was determined by means of OD-measurement.

## 2.1 Ligation in pUC 18

The ligation in pUC 18 was performed with the following batch:

Blunt-ended cDNA pool	50 ng
pUC 18 Sma I/BAP (50 ng/ $\mu$ l)	1 $\mu$ l
2x ligation buffer	10 $\mu$ l
DTT	1 $\mu$ l
T4 DNA ligase (6 U/ $\mu$ l)	3 $\mu$ l
water	add 20 $\mu$ l

The reactions were incubated overnight at room temperature.

## 2.2 Transformation of the Ligations in E. coli DH5 $\alpha$

The ligations were transformed into chemically competent E. coli DH5 $\alpha$ . The transformed cells were streaked on 2YT agarose plates with 100  $\mu$ g/ml of ampicillin, 625  $\mu$ m of IPTG and 0.005% of X-Gal and cultured overnight at 37°C.

A colony-PCR with vector-primers (M13 standard primer) was performed on 17 randomly selected white clones. In this case, 15-16 clones showed inserts with a size distribution that corresponded to that of the cDNA pool used.

For each subtraction, 1536 clones in 384-well plates were transferred with 50  $\mu$ l of 2YT, 1xHMFm, and 100  $\mu$ g/ml of ampicillin per well. The filled 384-well plates were incubated overnight at 37°C and could then be stored at -80°C.

### 3. Production of Colony Filters:

The 1536 clones of a subtractive cDNA-bank were inoculated on a Hybond Nylon N+ membrane (Amersham). The membrane was placed on a 2YT agarose plate with 100 µg/ml of ampicillin and incubated overnight at 37°C. The membrane was placed with the colony side upward for 4 minutes on Whatman 3MM paper soaked with denaturation solution (0.5M NaOH, 1.5M NaCl). Then, the membrane was incubated for 4 minutes on Whatman 3MM paper soaked in neutralization solution (1 M tris-HCl (pH 7.5), 1.5M NaCl). The membrane was then treated for 1 hour at 37°C with proteinase K. The membrane was immersed to this end in 300 ml of proteinase K buffer (50 mmol of NaCl, 5 mmol of EDTA, 10 mmol of tris-HCl (pH 8), 50 mg/ml of proteinase K). Finally, the membrane was dried at 80°C for 3 hours and was then used for the hybridizations.

### 4. Differential Hybridization:

To identify the differential expression of the cloned fragments, a differential hybridization on colony-filters of subtractive cDNA-banks was performed with the aid of a PCR-select differential screening kit.

To ensure specific hybridization of the forwards- and backwards-subtracted cDNA pools onto the subtractive cDNA-bank colony filter, it was necessary to remove the adaptor sequences in the hybridization sample.

As hybridization samples for the Rsa I-restriction, the subtracted cDNA pools were used:

cDNA pool	28 $\mu$ l
10x Rsa I restriction buffer (100 mmol of bis tris propane-HCl, pH 7.0, 100 mmol of Mg-chloride, 1 mmol of DTT)	3 $\mu$ l
Rsa I (10 U/ $\mu$ l)	2 $\mu$ l

The reactions were incubated at 37°C for 5 hours and then purified on PCR-purification columns and eluted in 30  $\mu$ l of water. The DNA concentration was determined by means of OD measurement.

## 5. Radioactive Labeling of the Subtracted cDNA Pools

The radioactive labeling of the subtracted cDNA pools was performed with the following batch:

cDNA pool	150 ng in	9 $\mu$ l
reaction buffer, -dCTP (333 mmol of tris-HCl, pH 8, 33.3 Mg-chloride, 10 mmol of 2-mercaptoethanol, 170 $\mu$ m of dATP, 170 $\mu$ m of dGTP, 170 $\mu$ m of dTTP)		3 $\mu$ l
random primer mix (0.9 mg/ml of random nonamers, 50 mmol of tris-HCl, pH 7.5, 10 mmol of Mg-chloride, 1 mmol of DTT, 50 $\mu$ g/ml of BSA)		2 $\mu$ l
AP32 dCTP		3 $\mu$ l
Klenow fragment (3 U/ $\mu$ l)		1.5 $\mu$ l

The reactions were incubated at 37°C for 1 hour, then purified on PCR-purification columns and eluted in 30  $\mu$ l of water. The specific activity of the reactions was determined to ensure that in both hybridization reactions, the same amount of labeled DNA was used.

#### 6. Prehybridization and Hybridization of Filters and Hybridization Samples

For the hybridizations, the following solution was used:

20x SSC	50 $\mu$ l
---------	------------

Blocking solution (10 mg/ml of sheared salmon sperm DNA, 0.3 mg/ml of complementary Oligos to the adaptors)	50 $\mu$ l
---	------------

The solution was incubated for 5 minutes at 98°C, then put on ice for 5 minutes and mixed with 5 ml of express-hybridization solution. This solution was then prehybridized in the hybridization flask with the filter at 72°C for 1 hour.

The hybridization samples were also mixed with the following solution:

20x SSC	50 $\mu$ l
---------	------------

Blocking solution (10 mg/ml of sheared salmon sperm DNA, 0.3 mg/ml of complementary oligos to the adaptors)	50 $\mu$ l
---	------------

The batch was then incubated for 5 minutes at 98°C and for 2 minutes on ice. The hybridization samples were then added to the



filter in the hybridization flasks and hybridized overnight at 72°C.

Then, the procedure was as follows:

- a) 4 x 20 minutes at 68°C with preheated 2xSSC, 0.5% SDS
- b) 2 x 20 minutes at 68°C with preheated 0.2xSSC, 0.5% SDS
- c) then exposure in phosphorus-imager-cassettes for 22 hours at room temperature.

## 7. Evaluation of Differential Hybridizations

The evaluation of the hybridizations was carried out on a phosphorus imager.

A clone was then classified as differentially expressed if it showed only a detectable hybridization signal with the forwards-subtracted cDNA pool or if the signal strength with the forwards-subtracted cDNA pool was larger by at least the factor of 5 than with the backwards-subtracted cDNA pool.

## 8. Confirmation of the Differential Expression by Means of Semi-quantitative RT-PCR

To confirm the differential expression of the clones with a differential hybridization result, sequences were selected randomly, and corresponding primers were produced.

As a method for detecting the differential expression, the comparative multiplex RT-PCR according to Pilarsky et al. (The Prostate 36: 85-91 (1998)) was used. As an internal standard, primers of the 23kD highly basic protein were used. The sequence of interest and the standard fragment were amplified

simultaneously in a reaction for a different number of cycles. The PCR products were then separated on a 6% sequencer gel and analyzed by means of software and quantified. First, the number of cycles was determined for which both the standard fragment and the sequence of interest were linearly amplified and which then were used for the quantifying PCR. For quantifying RT-PCR, different RNA preparations were used and in each case 3 reactions were prepared.

For 90% of the sequences examined with a differential hybridization result, a difference in the expression that was greater than a factor of 2 could be noted.

#### 9. Automatic Extension of the Nucleic Acid Sequences Found

To obtain as much sequence information as possible for each differentially expressed clone, an automatic extension of the starting sequence based on all available EST sequences was performed.

The automatic extension of sequence S takes place in three steps:

1. Determination of all S-homologous sequences from the total amount of all available ESTs from the LifeSeq database (status as of October 1997) with the aid of the BLAST algorithm (Altschul, S.; Gish, W.; Miller, W.; Myers, E.; Lipman, D. (1990) *J. Mol. Biol.*, 215, 403-410).

2. Assembling of these sequences by means of the standard program GAP4 (Bonfield, J.; Smith, K.; Staden, R. (1995), **Nucleic Acids Research** 23, 4992-4999).
3. Calculation of a consensus sequence from the assembled sequences.

An attempt is now made to extend the consensus sequence in the same way. This iteration is continued with the consensus sequence that is obtained in each case, until no further extension is possible.

#### 10. Nucleic Acid Sequences that are Found

Analogously to the procedure that is described under 1 to 9, e.g., the following sequences were found, of which several are over-expressed in culture type a) or culture type b) of the endothelial cells.

These nucleic acid sequences are also the subject matter of this invention.

Angiogenesis relates to the possible function of these gene areas.

The result is depicted in Table I below:

TABLE I

Seq ID No.	Expression	Function	Homology
1	Over-expressed in a)	Associated with proliferation	None
2	Over-expressed in a)	Associated with proliferation	None
3	Over-expressed in b)	Associated with differentiation	None
4	Over-expressed three times in b)	Gap junction, associated with differentiation	Connexin37; 96% identity over 933 bp
5	Over-expressed in b)	Associated with proliferation	None
6	Over-expressed twice in b)	Associated with differentiation	None
7	Over-expressed in b)	Associated with proliferation	None
8	Over-expressed in b)	Associated with differentiation	None
9	Over-expressed in b)	Associated with differentiation	None
10	Over-expressed in b)	Associated with differentiation	SPRY2; 99% identity over 1489 bp
11	Over-expressed in b)	Associated with differentiation	None
12	Over-expressed in b)	Associated with differentiation	Mouse Gas5; 78% identity over 121 bp
13	Over-expressed in b)	Associated with differentiation	None
14	Over-expressed in a)	Associated with differentiation	None
15	Over-expressed in b)	Associated with differentiation	None



Seq ID No.	Expression	Function	Homology
22	Over-expressed in b)	Associated with differentiation	None
23	Over-expressed five times in b)	Associated with differentiation	Mouse MMP; 83% identity over 831 bp
24	Over-expressed in b)	Associated with differentiation	None
25	Over-expressed four times in b)	Associated with differentiation	None
26	Over-expressed in b)	Associated with differentiation	None
27	Over-expressed in b)	Associated with differentiation	None
28	Over-expressed in b)	Associated with differentiation	KIAA0255; 57% identity over 326 bp
29	Over-expressed in b)	Associated with differentiation	Thymic epithelial cell antigen; 68% identity over 326 bp
30	Over-expressed in b)	Associated with differentiation	None
31	Over-expressed four times in b)	Associated with differentiation	None
32	Over-expressed in b)	Associated with differentiation	None
33	Over-expressed in b)	Associated with differentiation	None
34	Over-expressed in b)	Associated with differentiation	None
35	Over-expressed in b)	Associated with differentiation	None

36	Over-expressed in a)	Associated with proliferation	None
37	Over-expressed in b)	Associated with differentiation	CL-20; 87% identity with 122 bp
38	Over-expressed five times in b)	Associated with differentiation	Mouse numb; 90% identity over 310 bp
39	Over-expressed in a)	Associated with proliferation	None
40	Over-expressed in b)	Associated with differentiation	None
41	Over-expressed five times in a)	Associated with proliferation	None
42	Over-expressed six times in a)	Coreprocessor, associated with proliferation	SMRT; 99% identity over 785 bp
43	Over-expressed in a)	Associated with proliferation	None
44	Over-expressed in a)	Associated with proliferation	None
45	Over-expressed in a)	Associated with proliferation	None
46	Over-expressed in a)	Associated with proliferation	None

Seq ID No.	Expression	Function	Homology
47	Over-expressed five times in b)	Associated with differentiation	None
48	Over-expressed in a)	Associated with proliferation	MUC18; 99% identity over 780 bp
49	Over-expressed in a)	Associated with proliferation	None
50	Over-expressed in a)	Associated with proliferation	None
51	Over-expressed three times in a)	Associated with proliferation	None
52	Over-expressed in a)	Associated with proliferation	None
53	Over-expressed in a)	Associated with proliferation	None
54	Over-expressed in a)	Associated with proliferation	None
55	Over-expressed seven times in a)	Associated with EC proliferation and migration	CYR61; 100% identity over 2015 bp
56	Over-expressed in a)	Associated with proliferation	None
57	Over-expressed in a)	Associated with proliferation	None
58	Over-expressed three times in a)	Associated with proliferation	None
59	Over-expressed in b)	Associated with differentiation	None

a), b) = culture types



## 11. Expression Analysis

To examine whether the regulated sequences are also involved *in vivo* in the formation of new blood vessels, their expression in human placenta tissue in the eighth week was found to have a high angiogenesis activity, and their expression in human placenta tissue in the ninth month was found to have little angiogenesis activity. A stronger expression in the 8-week placenta was in this case evaluated as a reference to an angiogenesis-relevant function of the sequence. A stronger expression in the 9-month-old placenta was considered as a reference to a vessel-stabilizing function of the sequence. To this end, a semi-quantitative RT-PCR technique was used, the comparative multiplex RT-PCR. In this method, the expression of the sequence of interest becomes relative to the expression of a non-differentially regulated so-called "household gene," here the 23kD highly basic protein. As a positive control, the expression of the VEGF receptor KDR was determined. Of this endothelial cell-specific gene, it is known that it is highly regulated on angiogenetically active endothelium. A significantly increased KDR-expression in the 8-week placenta was correspondingly detected in comparison to the 9-month-old placenta.

The results are summarized in Table II:



49	**	-	-
50	n.d.		
51	**	**	**
52	***	****	**
53	****	****	**
54	n.d.		
55	**	**	****
56	***	***	*
57	****	***	-
58	****	**	-
KDR	**	****	**

# Key to the table:

\*\*\*\* = very strong expression

\*\*\* = strong expression

\*\* = moderate expression

\* = weak expression

- = expression below the detection limits

n.d. = not performed

The nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59 of the determined candidate genes according to the invention are described in the sequence protocol below.

Based on the considerable over-expression of sequence 34 in the tubular MVEC (>8x) and a weak homology to thrombospondin-2, a gene, which plays an important role in the maturation of the blood vessel system, sequence 34 was selected from the wide variety of sequences for further analysis. Starting from the identified partial sequence, the complete mRNA sequence for sequence 34 was determined by means of 5'- and 3'-RACE experiments. With a length of 6011 bp, the size of sequence 34 corresponds very well to the size (-6kb) determined in a Northern

hybridization. The complete mRNA sequence contains an open reader frame that codes for 1036 amino acids. The referenced protein has a molecular weight of -114kD, is cysteine-rich (12.5% cysteine content) and has a domain structure that has been unique up until now. The protein has an N-terminal signal peptide, a portion of a thiol protease domain, an RGD-pattern, 6 Von-Willebrand-factor type C-domains, a potential transmembrane domain and 5 possible N-glycosylation points. In addition, the genomic localization of sequence 34 in Chr. 2p21 and the complete Intron/Exon structure were determined.

Based on the domain structure of the protein, a type 1 transmembrane orientation can be assumed, with a long extracellular N-terminus and a short intracellular C-terminus. To test this, a rabbit-antiserum was produced, which is oriented against a peptide from the extracellular portion of the protein. With the aid of this antiserum, it was possible to show that the protein actually has a type I-transmembrane orientation.

This anti-sequence 34-serum was used for immunohistological studies in sections of an ovarian carcinoma, or a prepuce. In this case, it was shown that sequence 34 in the tumor is expressed from endothelial cells, but not from stromal cells. No sequence 34-expression could be detected in the prepuce, however. Sequence 34 is thus expressed in the angiogenetically active tumor endothelium of the ovarian carcinoma that is studied, but not in the dormant endothelium of the normal tissue. These results were confirmed by *in situ* hybridizations on the mRNA plane.

To determine the expression profile for sequence 34, a Northern hybridization was performed on various human tissues. In this case, an expression pattern for sequence 34, which suggests a specific function of the protein in endothelial cells, was shown with the strongest expression in the placenta, followed by the kidney, the heart and the lung.

To test whether sequence 34 has an important function in the tubulus formation in the *in vitro* model on matrigel, antisense oligonucleotides were produced. It was possible to determine an oligonucleotide that inhibits the sequence 34 expression. This oligonucleotide was not toxic for the cells and did not result in an altered proliferation behavior of the treated cells.

Endothelium cells, which were transfected with this oligonucleotide, showed, however, a dramatic inhibition of the tubulus formation on matrigel (> 20% of the control value) in comparison to untransfected cells and cells transfected with a control oligonucleotide. Sequence 34 thus contributes significantly to the formation of capillary-like structures. These results are consistent with the data from the expression analysis in the two placenta samples for sequence 34. The stronger expression 34 in the 9-month-old placenta was evaluated as a reference to a vessel-stabilizing function of the sequence. The antisense-oligonucleotide data clearly show that sequence 34 does not play any role during the endothelial cell proliferation but is involved significantly in the formation of stable capillary structures.

The invention thus relates in particular to the sequence Seq ID No. 34 and its use for the formation of stable capillary structures. In addition, this sequence and the protein sequence derived therefrom also relate to the use, either alone or in a formulation as a pharmaceutical agent for treatment of psoriasis, arthritis, such as rheumatoid arthritis, hemangioma, angiofibroma, eye diseases, such as diabetic retinopathy, neovascular glaucoma, nephropathies, such as glomerulonephritis, diabetic nephropathy, malignant nephrosclerosis, thrombic microangiopathic syndrome, transplant rejections and glomerulopathy, fibrotic diseases, such as cirrhosis of the liver, mesangial cell proliferative diseases, arteriosclerosis and injuries to the nerve tissue.

## Claims

1. A nucleic acid sequence that codes a gene product or a portion thereof, comprising
  - a) a nucleic acid sequence that is selected from the group of Seq. ID No. 1 to Seq. ID No. 59
  - b) an allelic variation of the nucleic acid sequences named under a)or
  - c) a nucleic acid sequence that is complementary to the nucleic acid sequences named under a) or b).
2. A nucleic acid sequence according to one of the sequences Seq. ID No. 1 to Seq. ID No. 59 or a complementary or allelic variant thereof.
3. Nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59, characterized in that it is expressed elevated in endothelial cell tissue.
4. BAC, PAC and Cosmid clones containing functional genes and their chromosomal localization according to nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59 for use as a vehicle for gene transfer.
5. A nucleic acid sequence according to claims 1 to 4, wherein it has 90% homology to a human nucleic acid sequence.
6. A nucleic acid sequence according to claims 1 to 4, wherein it has 95% homology to a human nucleic acid sequence.
7. A nucleic acid sequence comprising a portion of the nucleic acid sequences named in claims 1 to 6, in such a

sufficient amount that they hybridize with the sequences according to claims 1 to 6.

8. A nucleic acid sequence according to claims 1 to 7, wherein the size of the fragment has a length of at least 50 to 3000 bp.

9. A nucleic acid sequence according to claims 1 to 7, wherein the size of the fragment has a length of at least 150 to 2800 bp.

10. A nucleic acid sequence according to claims 1 to 7, wherein the size of the fragment has a length of at least 150 to 2600 bp.

11. A nucleic acid sequence according to one of claims 1 to 10, which codes at least one partial sequence of a bioactive polypeptide.

12. An expression cassette, comprising a nucleic acid fragment or a sequence according to one of claims 1 to 10, together with at least one control or regulatory sequence.

13. An expression cassette, comprising a nucleic acid fragment or a sequence according to claim 12, in which the control or regulatory sequence is a suitable promoter.

14. An expression cassette according to one of claims 12 and 13, wherein the DNA sequences located on the cassette code a fusion protein, which comprises a known protein and a bioactive polypeptide fragment.

15. Use of nucleic acid sequences according to claims 1 to 11 for producing full-length genes.



16. A DNA fragment, comprising a gene, that can be obtained from the use according to claim 15.

17. Host cell, containing as the heterologous part of its expressible genetic information a nucleic acid fragment according to one of claims 1 to 11.

18. Host cell according to claim 17, wherein it is a prokaryotic or eukaryotic cell system.

19. Host cell according to one of claims 17 or 18, wherein the prokaryotic cell system is E. coli, and the eukaryotic cell system is an animal, human or yeast cell system.

20. A process for the production of a polypeptide or a fragment, wherein the host cells according to claims 17 to 19 are cultivated.

21. An antibody that is directed against a polypeptide or a fragment that is coded by the nucleic acids of sequences Seq. ID No. 1 to Seq. ID No. 59, which can be obtained according to claim 20.

22. An antibody according to claim 21, wherein it is monoclonal.

23. Polypeptide sequence, expressed by one of nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59.

24. Polypeptide sequences according to claim 23, with at least 80% homology to these sequences.

25. Polypeptide sequences according to claim 23, with at least 90% homology to these sequences.

26. Polypeptide sequence, wherein it comprises the sequence Seq ID No. 34.

27. Use of polypeptide sequences according to claims 23 to 26 as tools for finding active ingredients against angiogenetic diseases.

28. Use of nucleic acid sequences according to sequences Seq. ID No. 1 to Seq. ID No. 59 for expression of polypeptides that can be used as tools for finding active ingredients against angiogenetic diseases.

29. Use of nucleic acid sequences Seq. ID No. 1 to Seq. ID No. 59 in sense or antisense form.

30. Use of polypeptide sequences according to claims 23 to 26 as pharmaceutical agents in gene therapy for treatment of angiogenetic diseases.

31. Use of polypeptide sequences according to claims 23 to 26 for the production of a pharmaceutical agent for treatment of angiogenetic diseases.

32. Pharmaceutical agent, containing at least one polypeptide sequence according to claims 23 to 26.

33. A nucleic acid sequence according to claims 1 to 11, wherein it is a genomic sequence.

34. A nucleic acid sequence according to claims 1 to 11, wherein it is an mRNA sequence.

35. Genomic genes, their promoters, enhancers, silencers, Exon structure, Intron structure and their splice variants, that can be obtained from cDNAs of sequences Seq. ID No. 1 to Seq. ID No. 59.

36. Use of the genomic genes according to claim 35, together with suitable regulatory elements.

37. Use according to claim 36, wherein the regulatory element is a suitable promoter and/or enhancer.

38. Use of the nucleic acid sequences according to claims 1 to 11 and the peptides according to claims 23 to 26, either alone or in a formulation as a pharmaceutical agent for treatment of psoriasis, arthritis, such as rheumatoid arthritis, hemangioma, angiofibroma, eye diseases, such as diabetic retinopathy, neovascular glaucoma, nephropathies, such as glomerulonephritis, diabetic nephropathy, malignant nephrosclerosis, thrombic microangiopathic syndrome, transplant rejections and glomerulopathy, fibrotic diseases, such as cirrhosis of the liver, mesangial cell proliferative diseases, arteriosclerosis and injuries of the nerve tissue.

39. Nucleic acid sequence Seq. ID No. 34, wherein it forms stable capillary structures.

40. Use of nucleic acid sequence Seq. ID No. 34 and the peptides expressed via this sequence, either alone or in a formulation as a pharmaceutical agent for treatment of psoriasis, arthritis, such as rheumatoid arthritis, hemangioma, angiofibroma, eye diseases, such as diabetic retinopathy, neovascular glaucoma, nephropathies, such as glomerulonephritis, diabetic nephropathy, malignant nephrosclerosis, thrombic microangiopathic syndrome, transplant rejections and glomerulopathy, fibrotic diseases, such as cirrhosis of the liver, mesangial cell proliferative diseases, arteriosclerosis and injuries of the nerve tissue.

**PCT**WELTORGANISATION FÜR GEISTIGES EIGENTUM  
Internationales BüroINTERNATIONALE ANMELDUNG VERÖFFENTLICHT NACH DEM VERTRAG ÜBER DIE  
INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT)

<b>(51) Internationale Patentklassifikation <sup>7</sup> :</b> <b>C12N 15/00</b>	<b>A2</b>	<b>(11) Internationale Veröffentlichungsnummer: WO 00/53734</b> <b>(43) Internationales Veröffentlichungsdatum:</b> 14. September 2000 (14.09.00)
<b>(21) Internationales Aktenzeichen:</b> PCT/EP00/02005 <b>(22) Internationales Anmeldedatum:</b> 8. März 2000 (08.03.00)  <b>(30) Prioritätsdaten:</b> 199 11 684,9 9. März 1999 (09.03.99) DE 199 48 679,4 1. Oktober 1999 (01.10.99) DE  <b>(71) Anmelder (für alle Bestimmungsstaaten ausser US):</b> SCHERING AKTIENGESELLSCHAFT [DE/DE]; Müllerstrasse 178, D-13353 Berlin (DE).  <b>(72) Erfinder; und</b> <b>(75) Erfinder/Anmelder (nur für US):</b> THIERAUCH, Karl-Heinz [DE/DE]; Hochwildpfad 45, D-14169 Berlin (DE). GLIENKE, Jens [DE/DE]; Kantstrasse 110, D-10627 Berlin (DE). HINZMANN, Bernd [DE/DE]; Saupeweg 10, D-13127 Berlin (DE). PILARSKY, Christian [DE/DE]; Rotkelchenweg 15, D-14532 Stahnsdorf (DE).	<b>(81) Bestimmungsstaaten:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO Patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), eurasisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI Patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Veröffentlicht</b> <i>Ohne internationalen Recherchenbericht und erneut zu veröffentlichen nach Erhalt des Berichts.</i>	
<b>(54) Title:</b> HUMAN NUCLEIC ACID AND PROTEIN SEQUENCES OBTAINED FROM ENDOTHELIAL CELLS <b>(54) Bezeichnung:</b> MENSCHLICHE NUKLEINSÄURE- UND PROTEIN-SEQUENZEN AUS ENDOTHELZELLEN  <b>(57) Abstract</b> <p>The invention relates to nucleic acid sequences – mRNA, cDNA, genome sequences – obtained from human endothelial cells and coding for gene products or parts thereof, as well as to their use. The invention also relates to the polypeptides obtained by means of said sequences and to their use.</p> <b>(57) Zusammenfassung</b> <p>Es werden Nukleinsäure-Sequenzen – mRNA, cDNA, genomische Sequenzen – aus Gewebe menschlicher Endothelzellen, die für Genprodukte oder Teile davon kodieren und deren Verwendung, beschrieben. Es werden weiterhin die über die Sequenzen erhältlichen Polypeptide und deren Verwendung beschrieben.</p>		

**DECLARATION FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**HUMAN NUCLEIC ACID SEQUENCES AND PROTEIN SEQUENCES FROM ENDOTHELIAL CELLS** ✓

the specification of which

☐ is attached hereto

☒ was filed on 8 MARCH 2000 ✓ as United States Application Number or PCT International Application Number PCT/EP00/02005 ✓ and (if applicable) was amended on \_\_\_\_\_

I hereby authorize our attorneys to insert the serial number assigned to this application.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 USC §119			
APPLICATION NO.	COUNTRY	DAY/MONTH/YEAR FILED	PRIORITY CLAIMED
199 11 684.9 ✓	GERMANY ✓	9 MARCH 1999 ✓	YES
199 48 679.4 ✓	GERMANY ✓	1 OCTOBER 1999 ✓	YES

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

PROVISIONAL APPLICATION(S) UNDER 35 U.S.C. §119(e)	
APPLICATION NUMBER	FILING DATE

I hereby claim the benefit under 35 U.S.C. §120 of any United States application, or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. §112.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

PRIOR U.S./PCT INTERNATIONAL APPLICATION(S) DESIGNATED FOR BENEFIT UNDER 37 U.S.C. §120		
APPLICATION NO.	FILING DATE	STATUS — PATENTED, PENDING, ABANDONED

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith: I. William Millen (19,544); John L. White (17,746); Anthony J. Zelano (27,969); Alan E.J. Branigan (20,565); John R. Moses (24,983); Harry B. Shubin (32,004); Brion P. Heaney (32,542); Richard J. Traverso (30,595); John A. Sopp (33,103); Richard M. Lebovitz (37,067); John H. Thomas (33,460); Catherine M. Joyce (40,668); Nancy J. Axelrod (44,014); James T. Moore (35,619); James E. Ruland (37,432); Jennifer J. Branigan (40,921) and Robert E. McCarthy (46,044)

Send Correspondence to Customer Number 23599



23599

PATENT TRADEMARK OFFICE

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of sole or first inventor (given name, family name)	
<b>Karl-Heinz THIERAUCH</b>	
Signature <i>Karl-Heinz Thierauch</i>	Date <i>29.10.01</i>
Residence Berlin, Germany <i>DEX</i>	Citizenship Germany ✓
Post Office Address Hochwildpfad 45, D-14169 Berlin Germany	
Full Name of additional joint inventor (given name, family name)	
<b>Jens GLIENKE</b>	
Signature <i>Jens Glienke</i>	Date <i>29.10.01</i>
Residence Berlin, Germany <i>DEX</i>	Citizenship Germany ✓
Post Office Address Kantstrasse 110, D-10627 Berlin, Germany	
Full Name of additional joint inventor (given name, family name)	
<b>Bernd HINZMANN</b>	
Signature <i>Bernd Hinzmann</i>	Date <i>6.11.01</i>
Residence Berlin, Germany <i>DEX</i>	Citizenship Germany ✓
Post Office Address Saupeweg 10, D-13127 Berlin, Germany	
Full Name of additional joint inventor (given name, family name)	
<b>Christian PILARSKY</b>	
Signature <i>Christian Pilarsky</i>	Date <i>6.11.01</i>
Residence Stahnsdorf, Germany <i>DEX</i>	Citizenship Germany ✓
Post Office Address Rotkelchenweg 15, D-14532 Stahnsdorf, Germany	
Full Name of additional joint inventor (given name, family name)	
Signature	Date
Residence	Citizenship
Post Office Address	

☐ Additional joint inventors are named on separately numbered sheets attached hereto.